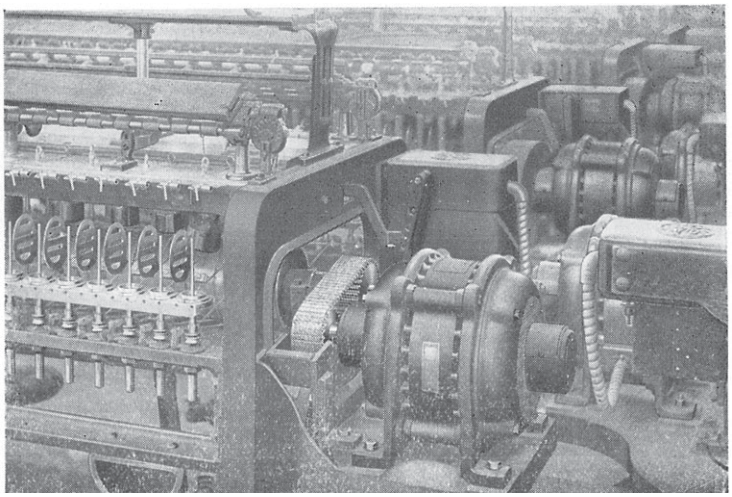
THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART

CIRCULAR
OF THE
TEXTILE DEPARTMENT
(Philadelphia Textile School)
Forty-Third Year
1926-1927

BROAD AND PINE STREETS
PHILADELPHIA



Morse Silent Chain Drives from motors to spinning frames, Henry River Mfg. Co., Henry River, N. C.

From belts to Morse Chains

Originally driven by belts, these spinning frames are now giving increased production, better yarns and improved working conditions. Brackets designed by Morse plus Morse Silent Chain Drives made this change possible.

Morse Drives are positive, flexible, 98.6% efficient and especially effective on short centers. One tenth to 5,000 H.P., 6,000 to 250 r.p.m. and slower, ⅜″ to 3″ pitch. Over 5,000,000 H.P. installed. Many 15 and 20 years old are still giving satisfactory service.

Morse Engineers are always ready to cooperate

MORSE CHAIN CO., ITHACA, N. Y., U. S. A.

ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
CHICAGO, ILL.
CLEVELAND, OHIO
DENVER, COLO.
DETROIT, MICH.
LOUISVILLE, KY.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
OMAHA, NEB.
PHILADELPHIA, PA.
PITTSBURGH, PA.
SAN FRANCISCO, CALIF.
ST. LOUIS, MO.
TORONTO, 2, ONT., CAN.
WINNIPEG, MAN., CAN.

MORSE SILENT CHAIN DRIVES

THE MORSE "ROCKER JOINT"

The Pennsylvania Museum and School of Industrial Art

Broad and Pine Streets
Philadelphia

CIRCULAR
OF THE
TEXTILE DEPARTMENT
(Philadelphia Textile School)
Forty-Third Season
1926—1927

Circular of the Art Department may be had on application

TABLE OF CONTENTS

OFFICERS FOR 1926–1927

President
ELI KIRK PRICE

Vice-Presidents
WILLIAM WOOD
WILLIAM M. ELKINS

Secretary
CHARLES H. WINSLOW

Treasurer
CHARLES BOND

Assistant Treasurer
THOMAS H. WILLSON

Principal of the School
EDMONDSON HUSSEY
Broad and Pine Streets

Director, Philadelphia Textile School
E. W. FRANCE

Director of the Museum
FISKE KIMBALL
Memorial Hall, Fairmount Park

BOARD OF TRUSTEES

Exofficiis

GIFFORD PINCHOT
Governor of Pennsylvania

W. FREELAND KENDRICK
Mayor of Philadelphia

By Appointment

EDWIN O. LEWIS, Appointed by the State Senate.
JOHN T. WINDRIM, Appointed by the House of Representatives.
CHARLES J. WEBB, Appointed by the City Council.
EDWARD T. STOTESBURY, Appointed by the Commissioners of Fairmount Park.

Elected by the Members

CHARLES BOND
MRS. EDWARD BROWNING
WILLIAM M. ELKINS
JOHN GRIBBEL
JOHN S. JENKS
CHARLES H. LUDINGTON
MRS. ARTHUR V. MEIGS
MRS. FRANK T. PATTERSON
ELI KIRK PRICE
SAMUEL REA
HOWARD REIFSNYDER
THOMAS ROBINS
EDGAR V. SEELER
J. STOGDELL STOKES
JAMES F. SULLIVAN
GEORGE D. WIDENER
WILLIAM WOOD

EXECUTIVE COMMITTEE

ELI KIRK PRICE, *Chairman*

CHARLES BOND
MRS. EDWARD BROWNING
WILLIAM M. ELKINS
JOHN S. JENKS
MRS. FRANK T. PATTERSON
HOWARD REIFSNYDER
THOMAS ROBINS
EDGAR V. SEELER
J. STOGDELL STOKES
CHARLES J. WEBB
GEORGE D. WIDENER
WILLIAM WOOD

COMMITTEE ON INSTRUCTION

ELI KIRK PRICE, *Chairman*

MRS. RUDOLPH BLANKENBURG
CHARLES BOND
CHARLES L. BORIE, JR.
MRS. HENRY BRINTON COXE
JOHN FISLER
SAMUEL S. FLEISHER
JOHN S. JENKS
MRS. ROBERT R. LOGAN
MRS. ARTHUR V. MEIGS
MRS. H. S. PRENTISS NICHOLS
MRS. J. HOWARD RHOADS
WILLIAM H. RICHARDSON
EDGAR V. SEELER
CHARLES J. WEBB
WILLIAM WOOD

Honorary Member

MRS. JONES WISTER

ASSOCIATE COMMITTEE OF WOMEN

MRS. RUDOLPH BLANKENBURG, *Honorary President*
MRS. FRANK THORNE PATTERSON, *President*

Vice-Presidents

MISS NINA LEA
MISS H. S. PRENTISS NICHOLS
MRS. JONES WISTER
MRS. HENRY BRINTON COXE

MRS. J. HOWARD RHOADS, *Recording Secretary*
MRS. EDWARD BROWNING, *Treasurer*
MRS. THORNTON OAKLEY, *Corresponding Secretary*

MRS. EDGAR W. BAIRD
MRS. EDWIN N. BENSON, JR.
MRS. WILLIAM T. CARTER
MRS. J. HAMILTON CHESTON
MRS. HERBERT L. CLARK
MRS. ROBERT HARE DAVIS
MRS. S. GREY DAYTON
MRS. WILLIAM A. DICK
MRS. RUSSELL DUANE
MISS CORNELIA L. EWING
MISS LOUISA EYRE
MRS. GEORGE H. FRAZIER
MRS. HENRY S. GROVE
MRS. F. WOODSON HANCOCK
MRS. CHARLES WOLCOTT HENRY
MISS MARGARETTA S. HINCHMAN
MRS. JOSEPH B. HUTCHINSON
MRS. CHARLES F. JUDSON
MRS. J. LOUIS KETTERLINUS
MRS. JOSEPH LEIDY
MRS. ROBERT R. LOGAN
MRS. NORMAN MACLEOD
MRS. CAMPBELL MADEIRA
MRS. JOHN H. MCFADDEN, JR.
MRS. JOHN D. MCILHENNY
MRS. ARTHUR V. MEIGS
MRS. ELI KIRK PRICE
COUNTESS OF SANTA EULALIA
MRS. C. SHILLARD-SMITH
MISS JESSIE WILCOX SMITH
MRS. W. STANDLEY STOKES
MRS. WILLIAM H. WALBAUM
MRS. ALBERT B. WEIMER
MRS. P. A. B. WIDENER, 2ND
MRS. C. STEWART WURTS

Contributing Member

MRS. PERCIVAL ROBERTS, JR.

Honorary Members

MRS. HAMPTON L. CARSON
MISS MARGARET CLYDE
MRS. WM. D. FRISHMUTH
MRS. EDWARD T. STOTESBURY
MRS. M. HAMPTON TODD

DEPARTMENTAL ADVISERS

The school takes pleasure in announcing that the following gentlemen will act as advisers in matters pertaining to the various branches of the courses of study.

JOHN R. BEATTY, of Robert Beatty & Co., Philadelphia, Manufacturers of Fine Combed Hosiery Yarns.

CHAS. BOND, of Chas. Bond Co., Philadelphia, Textile Mill Supplies and Power Transmission Equipment.

E. K. BREADY, Proprietor, Girard Worsted Mills, Philadelphia, Manufacturers of Cotton, Wool and Worsted Novelty Dress Goods.

HARRY E. BUTTERWORTH, of H. W. Butterworth & Sons, Philadelphia, Manufacturers of Bleaching, Dyeing, Printing, Drying and Finishing Machinery.

WALTER ERBEN, Firm of Erben, Harding Co., Manufacturers of Fine Worsted Mohair, Merino and Genapped Yarns.

WILLIS FLEISHER, Firm of Shelbourne Mills Co., Philadelphia, Manufacturers of Worsted Men's Wear.

JOHN FISLER, President, Yewdall & Jones, Worsted Yarns, Philadelphia.

ALBERT FOSTER, President of Firth and Foster Co., Philadelphia, Dyers and Finishers.

ROBERT T. FRANCIS, President, American Association of Woolen and Worsted Manufacturers.

WM. T. GALEY, JR., General Manager, Aberfoyle Mfg. Co., Chester, Pa., Manufacturers of Fine Fancy Cotton Shirtings, Ginghams, Madras, Leno and Novelty Fabrics.

JOS. R. GRUNDY, of the firm of Wm. H. Grundy & Co., Bristol, Pa., Top Makers and Worsted Spinners.

GEO. C. HETZEL, of Geo. C. Hetzel & Co., Chester, Pa., Manufacturers of Worsted and Woolen Suitings and Dress Goods.

GEORGE H. HODGSON, Vice-President and General Manager, Cleveland Worsted Mills, Cleveland, O., The Rowland and Fern Rock Worsted Mills, Philadelphia, Pa., Manufacturers of Ladies' Dress Goods, Men's Suitings, Plain and Fancy.

GEORGE HUTCHINS, formerly General Superintendent, Crompton & Knowles Loom Works, Worcester, Mass.; Providence, R. I., and Philadelphia.

EDWARD JEFFERSON, Firm of Edward Jefferson, Philadelphia, Importer of Worsted Machinery.

HARRY LONSDALE, Superintendent, F. A. Bochmann & Company, Inc., Philadelphia, Worsted and Woolen Dress Goods.

WM. L. LYALL, Chairman of Executive Committee, Brighton Mills, Passaic, N. J., Manufacturers of Automobile Tire and Special Fabric.

A. E. MARGERISON
W. H. MARGERISON } Columbia Towel Mills, Philadelphia.

THEODORE MILLER, of the firm of Stead, Miller & Co., Philadelphia, Drapery and Upholstery Manufacturers.

E. B. MOORE, President and General Manager of Penn Worsted Co., Philadelphia, Dyers, Spinners and Twisters of Silk, Worsted and Cotton Yarns.

WILLIAM H. RICHARDSON, Worsted, Wool and Cotton Yarns, Philadelphia.

WILLIAM C. ROBB, Philadelphia Representative of General Dyestuff Corporation, New York, N. Y., Dyes and Chemicals.

EDWARD ROSSMÄSSLER,
WALTER ROSSMÄSSLER, } of the Sauquoit Silk Mfg. Co., Philadelphia.

OTTO SCHAUM,
W. H. ROMETSCH, } Fletcher Works of Philadelphia (formerly Schaum & Uhlinger), Manufacturers of Weaving Machinery for all kinds of Narrow Fabrics.

CHARLES STEAD, Superintendent of Folwell Bros. & Co., Philadelphia, Manufacturers of Coat Linings, Fine Dress Goods, etc.

ALBERT TILT, Secretary and Treasurer of the Phoenix Silk Mfg. Co., Mills at Paterson, N. J. and Allentown, Pa.

WILLIAM J. WALL, Proprietor of Nicetown Dye Works, Philadelphia.

CHARLES J. WEBB, President, Charles J. Webb Sons Co., Inc. Wool, Philadelphia.

MATTHEW P. WHITTALL, of M. J. Whittall Associates, Worcester, Mass.

J. P. WOOD, Former President, National Association of Woolen and Worsted Manufacturers.

CALENDAR—SCHOOL YEAR 1926–1927

SEPTEMBER

Monday, 13th—Arithmetic Test for Admission to Day Classes.
Tuesday, 14th—Registration Day.
Wednesday, 15th—Sessions of Day Classes begin.

OCTOBER

Wednesday, Sept. 29th—7 P. M.—Registration of Students in Evening Classes for places not previously filled.
Monday, Oct. 4th—Sessions of Evening Classes begin.

NOVEMBER

Saturday, 6th—Day Classes, First Quarter ends.
Monday, 8th—Day Classes, Second Quarter begins.
Thursday, 25th,
Friday, 26th,
Saturday, 27th, } Thanksgiving Holidays. School closed.

DECEMBER

Monday, 20th,
through
Saturday, Jan. 1st, 1927 } Christmas Holidays. School closed.

JANUARY

Monday, 3rd—School re-opens.
Saturday, 15th—Day Classes, Second Quarter ends.
Monday, 17th—Day Classes—Mid-Year Examinations begin.
Wednesday, 26th—Day Classes—Mid-Year Examinations end.
Thursday, 27th—Day Classes, Third Quarter begins.

FEBRUARY

Tuesday, 22nd—Washington's Birthday. School closed.

MARCH

Saturday, 19th—Day Classes, Third Quarter ends.
Monday, 21st—Day Classes, Fourth Quarter begins.

APRIL

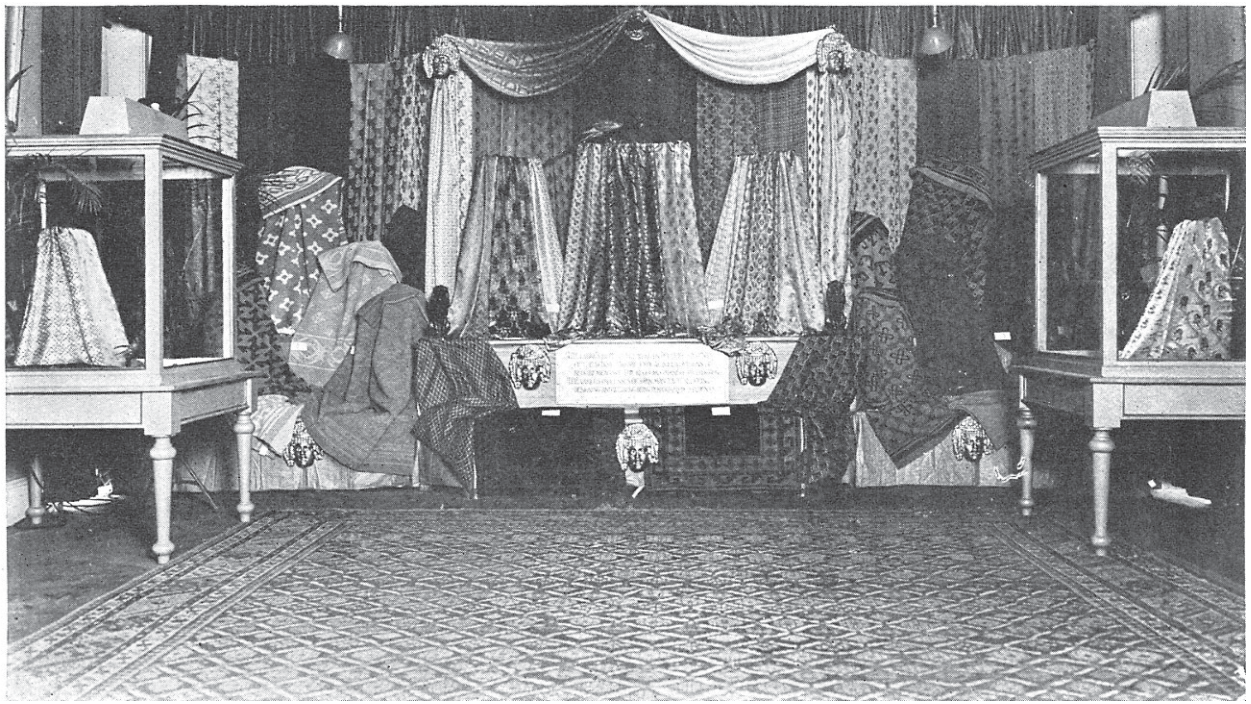
Friday, 8th—Evening School closes.
Thursday, 14th,
Friday, 15th—Good Friday
Saturday, 16th,
Monday, 18th, } School closed.

MAY

Tuesday, 17th—Day Classes, Fourth Quarter ends.
Wednesday, 18th—Day Classes, Final Examinations begin.
Friday, 27th—Day Classes, Final Examinations end.
Saturday, 28th—School closes.

JUNE

Thursday, 2nd—Annual Commencement and Exhibition.
Friday, 3rd—Alumni Outing and Banquet.



EXHIBITION HALL

Showing special display of Dress Silks, Draperies and Upholstery Fabrics

STAFF OF THE TEXTILE SCHOOL

E. W. FRANCE, *Director, Lecturer on Raw Materials, Processes and Fabrics.*

BRADLEY C. ALGEO, *Asst. Director, Professor in Charge of Weave Formation, Analysis and Structure of Fabrics.*

FRANK L. GIESE, *Instructor in Weave Formation, Analysis and Structure of Fabrics.*

RICHARD S. COX, *Professor in Charge of Jacquard Design, Drawing and Color Work.*

ERCAL KAISER, *Instructor in Jacquard Design and Color Work.*

RALPH DUNKELBERGER, *Instructor in Free-Hand Drawing and Figured Design.*

ELMER C. BERTOLET, *Professor in Charge of Chemistry, Dyeing and Printing.*

HOWARD A. WALTER, *Assistant Professor in Charge of Chemistry and Dyeing.*

PERCIVAL THEEL, *Instructor in Dyeing and Chemistry.*

JOSEPH E. GOODAVAGE, *Instructor in Dyeing, Bleaching and Printing.*

GEORGE G. BYLER, *Instructor in Elementary Chemistry.*

JOHN LOCKWOOD, *Instructor in Charge of Wool Carding and Spinning, Worsted Drawing and Spinning.*

ALAN G. MARQUART, *Assistant in Wool Carding and Spinning, Worsted Drawing and Spinning.*

JOHN NAAB, *Instructor in Charge of Cotton Carding and Spinning, Silk Manufacturing and Hosiery Knitting.*

PAUL W. YOUSE, *Assistant Instructor in Cotton Carding and Spinning and Hosiery Knitting.*

WILLIAM PFEIFFER *Instructor in Charge of Power Weaving and Related Branches.*

ERVIN WILMER
ROBERT J. REILLY } *Assistants in Power Weaving and Related Branches.*

WM. A. McLAIN, *Instructor in Charge of Elementary Weaving and Related Branches.*

JOHN W. FRANCE, *Assistant in Elementary Weaving and Related Branches.*

FREDERICK JENNINGS, *Instructor in Materials Used in the Wool and Worsted Industry.*

ALFRED BURHOUSE, *Instructor in Wool and Worsted Cloth Finishing.*

ANNA C. KRECKER, *Secretary.*

THOMAS H. WILLSON, *Registrar.*

VIEW IN MAIN EXHIBITION ROOM

Here may be seen fabrics executed by students from their own designs. Fibres in all stages of preparation, dyestuffs and chemicals manufactured in the laboratory, etc.

Historical Sketch

of

The Pennsylvania Museum and School of Industrial Art

Origin and Purpose

The Pennsylvania Museum and School of Industrial Art, an institution the origin of which was due to the increased interest in art and art education awakened by the Centennial Exhibition, was incorporated on the twenty-sixth day of February, 1876, for the purpose, as stated in the charter, of establishing "for the State of Pennsylvania, in the City of Philadelphia, a Museum of Art in all its branches and technical applications, and with a special view to the development of the Art Industries of the State, to provide instruction in Drawing, Painting, Modeling, Designing, etc., through practical schools, special libraries, lectures and otherwise."

Location of Museum

The purpose of the institution as thus defined is distinctly industrial. The collections at Memorial Hall, in Fairmount Park, where the Museum is located, embrace examples of art work of every description. It was determined by the founders to make the collections of the Pennsylvania Museum as largely as possible illustrative of the application of art to industry, and the instruction in the school has had constant reference to a similar purpose.

Source of Original Collection

In the selection of objects, the trustees had the benefit of the advice of the foreign commissioners to the Exhibition, and, in several instances, the institution was the recipient of valuable gifts from individual exhibitors. Around the nucleus thus formed, the Museum has grown

by purchase, gift and bequest to its present proportions, numbering in its collection upwards of 40,000 objects.

Recent Additions

The Museum possesses several special collections, sufficiently complete in themselves to be regarded as representative of the departments to which they belong. Of these, the collection of American pottery, made by Mr. Edwin A. Barber; the collections of coins and medals; the collections of Etruscan and Greco-Roman Pottery; the John T. Morris collection of glass; a collection of mediæval wrought iron and the collection of textiles, are perhaps the most important. The Museum is visited by about 500,000 persons a year.

Opening of the School

The School was opened during the winter of 1877-78, in temporary quarters, at Broad and Vine Streets, in the building since known as Industrial Hall. It was removed in 1879 to the rooms of the Franklin Institute, at 15 South Seventh Street, and again, in 1880, to the building 1709 Chestnut Street, where it remained until its removal, in 1884, to 1336 Spring Garden Street.

Location of School

The munificent gift of $100,000, by Mr. Wm. Weightman, and the generous response of the public of Philadelphia to an appeal for assistance, by which a like amount was raised by popular subscriptions during the spring of 1893, enabled the institution to acquire the magnificent property at the northwest corner of Broad and Pine Streets, which it occupies at present. The property, with a front of 200 feet on Broad Street and 400 feet on Pine Street, is by far the most spacious and most advantageous in its location of any establishment in America that is devoted to the uses of a school of art, situated as it is on the principal street and in the very heart of the city.

First Courses of Study General Only

Up to the time of the removal to Spring Garden Street, the work of the classes was confined to the general courses in Drawing, Painting and Modeling, with constant regard

to the needs of the industries, but without attempting to provide instruction in any of the occupations themselves.

The necessity of affording facilities for such technical instruction, however, became apparent very early in the history of the School. It was seen that only by familiarizing the students with the processes and industrial applications of design could the proper direction be given to such purely artistic training as the School had to offer.

Additions to the Curriculum

Applied Design and Wood Carving were added to the curriculum in 1884, and the Philadelphia Textile School was organized in the same year. The Department of Chemistry and Dyeing was added to the Textile School in 1887, and the Class in Interior Decoration was added in 1892, at which time the Class in Architectural Design was also organized; the Departments of Wool Carding and Spinning and Cloth Finishing were added to the Textile School in 1894, that of Cotton Carding and Spinning in 1896. A Department of Worsted Yarn Manufacture was established in 1898, and those of Metal-Work and Pottery to the Art School in 1903.

The present organization of the School is as follows:

1. SCHOOL OF ART, comprising the departments of:—

Drawing,	Illustration,
Applied Design,	Decorative Sculpture,
Normal Art Instruction,	Metal Work,
Wood Work and Carving,	Decorative Painting,
Pottery.	Architectural Drawing and Design.

2. PHILADELPHIA TEXTILE SCHOOL, comprising the departments of:—

Fabric Structure and Design (cotton, wool, worsted, silk)

Warp Preparation and Weaving,	Woolen Yarn Manufacture,
Color Theory and Harmony,	Worsted Yarn Manufacture,
Jacquard Design (figured work),	Cotton Yarn Manufacture,
Chemistry, Dyeing and Printing,	Seamless Hosiery Knitting;

Wool and Worsted Cloth Finishing.

MEMBERSHIP IN THE CORPORATION

The Trustees of the Pennsylvania Museum and School of Industrial Art desire the active co-operation of all public-spirited citizens who are in sympathy with its work.

The institution has only the nucleus of an endowment and depends for its support, in addition to the very moderate fees for tuition and appropriations from the City and State, on the dues of members, of which there are eight classes, viz:

Benefactors in Perpetuity, who contribute or bequeath $25,000 or more to the Corporation.

Patrons in Perpetuity, who contribute or bequeath $5,000 to the Corporation.

Fellows for Life, who contribute $1,000 at one time.

Life Members, who contribute $300 at one time.

Fellows, who contribute $250 a year.

Sustaining Members, who contribute $100 a year.

Contributing Members, who contribute $25 a year.

Annual Members, who contribute $10 a year.

Fellows or Sustaining Members whose contributions aggregate $1,000 may be elected Fellows for Life.

Benefactors, Patrons, Fellows for Life and Life Members shall not be liable to annual dues.

All members are entitled to the following benefits:

The right to vote and transact business at the Annual Meeting.

Invitations to all general receptions and exhibitions held at the Museum and the School.

Free access to the Museum and School Libraries and admission to all lectures.

Also a copy of each of the following publications:

The Annual Report of the Corporation.

The Annual Circulars of the Art and the Philadelphia Textile School.

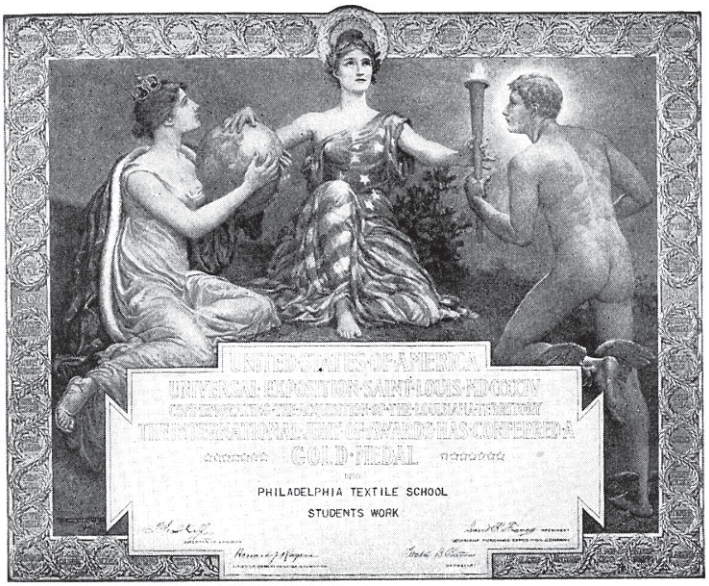
The Art Handbooks and Art Primers, issued from time to time by the Museum.

(A printed list of publications will be mailed to any member on application.)

The Illustrated Monthly BULLETIN of the Museum.

A list of members is published each year in the Annual Report. All persons who are in sympathy with the work of the institution will be cordially welcomed as members.

Applications for membership, and remittances should be sent to the Secretary, Charles H. Winslow, at the School, Broad and Pine Streets, Philadelphia.



Honors Received by the School for Exhibits of Students' Work at Expositions

1884—The World's Industrial Cotton Centennial Exposition, New Orleans:
Diploma of Honor.

1893—The World's Columbian Exposition, Chicago:
Diploma of Honor—Bronze Medal.

1895—Cotton States and International Exposition, Atlanta, Georgia:
Diploma of Honor—Gold Medal.

1901—Pan-American Exposition, Buffalo:
Diploma of Honor—Silver Medal.

1902—South Carolina Interstate and West Indian Exposition, Charleston:
Diploma of Honor—Gold Medal.

1904—Louisiana Purchase Exposition, St. Louis:
Diploma of Honor—Gold Medal.


MEDALS AWARDED
AWARDED TO
CHARLESTON S.C.
1901-2
GOLD MEDAL
LOUISIANA PURCHASE
EXPOSITION
A. MOORE. 07.

PHILADELPHIA TEXTILE SCHOOL
OF THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART

Purpose of the School

The Philadelphia Textile School aims to give a technical education in all branches of the textile industry. Organized in 1884, its object from the start has been to fit young men for positions of responsibility in the manufacture and sale of textiles. The recent growth of the industry in this country has resulted not only in a larger number of mills, but also in a great increase in the size of the establishments, and a corresponding development of division of labor and specialization of production. This specialization has been carried so far that it has become virtually impossible for a general and comprehensive knowledge of the business as a whole to be obtained in the typical modern mill, and the young man who aspires to the possession of such knowledge must seek it elsewhere. It is apparent, then, that the causes which have so greatly increased the demand for the trained master, and those which have conspired to prevent his development in the mill itself, are one and the same, and the Textile School has come into existence simply to meet the advancing requirements of the textile trade.

Men were selected as instructors not only on account of their fitness to teach, but because of their extensive and varied experience in a wide field of industry. The School does not aim to supplant practical experience, but it does claim to prevent waste of effort in unprofitable routine and to economize effort by properly directing it.

Location

Philadelphia possesses unequaled advantages as a home for a textile school, ranking first among the American cities in the total manufacture of textiles. This is not only true of textiles as a whole, but the leading position which it holds in various

lines of textiles testifies to the diversity as well as to the importance of its industries.

The textile and allied industries of the City of Philadelphia in 1923 turned out products having a total value of $521,601,100, according to the preliminary figures compiled by the Secretary of Internal Affairs of the State, Mr. James F. Woodward. In making these figures public, Secretary Woodward points to the fact that this is 14.5 per cent over year 1922.

Philadelphia's annual production of wool and worsted yarns, we find, is $52,514,800, that of carpets and rugs, $57,022,900; cotton goods, including yarns and threads, aggregate $52,451,000; hosiery, $72,201,000; woolen, worsted and felt goods, $43,584,100; silk and silk goods, including product of throwsters, $31,533,600; dyeing and finishing textile fabrics, $18,424,900, and braids, tapes and bindings, $13,446,200; miscellaneous knit goods, $20,173,100; making a sum of $455,639,000 for 1922, and $521,601,100 for 1923, showing an increase of 14.5 per cent as above noted.

"Philadelphia contains 736 spinning, weaving and knitting establishments; upwards of 100 independent dyeing and finishing works; 128 raw wool dealers; 106 dealers in cotton, wool and worsted yarns; 80 chemical and dyestuff firms; as well as allied interests which contribute to its enormous production, embracing makers of machinery for spinning, weaving, knitting, dyeing, finishing, power transmission and mill supplies.

"There are 55 prominent men's wear and dress goods commission houses and selling agencies in the city; 100 jobbers in woolen, cotton and silk piece goods; 189 wholesale clothing and 104 women's suit and clothing manufacturers."

All of these, together with the large department stores, are, in themselves, educating factors of no mean importance. The opportunity of inspecting the ever-changing displays of these foremost retail establishments is of great value to the student, and is only one of the many advantages which a few years' residence in such a city is certain to possess for

the ambitious student, apart from any immediate reference to the work of the school.

Environment

The importance of artistic effect in textile products cannot be overestimated, for it is this quality which first attracts the purchaser's attention. The School's association with the School of Applied Art affords an exceptional opportunity for training in this all-important branch of the work. The buildings, housing both of the Schools (the Art and Textile) are situated on the same plot of ground, on one of Philadelphia's main thoroughfares, in the heart of the city. The student may arrange for more or less artistic training in accordance with the requirements of his course of study, but in any event he works in an artistic atmosphere and profits by the refining influence which it exerts.

Historical

The Philadelphia Textile School, as before noted, was organized in 1884. It represents the most important effort which has yet been made in America, to organize in conjunction with an Art School, technical instruction that has direct reference in its application to the actual needs of the Textile Industry.

The development and realization of this purpose were accomplished through the generous co-operation and support of the most energetic and influential members of the Philadelphia Association of Textile Manufacturers.

Fostering Influence

The Philadelphia Association of Textile Manufacturers was formed in 1882, and among the objects for which it was specially created was the fostering of technical education. Its members represented the progressive element of the manufacturing community of Philadelphia and vicinity. These gentlemen were fully aware of the progress of technical schools for the Textile Arts in Germany, France and England, and were persuaded that the United States could not hope to maintain the best market for her products unless those products combined the highest skill in manufacture and the best taste in design. At that time no thorough school existed in this country, and it was necessary to begin at the foundation of the work, without previous knowledge of the exact methods to be adopted or the means to be employed to reach the desired end.

It was apparent that considerable money must be raised to properly lay the foundation for a successful school. The sum of $50,000 was fixed upon as the minimum amount with which to inaugurate the work, and the Association endeavored to obtain this sum from the manufacturers of Philadelphia by subscription; but, as with every public-spirited enterprise, a few leading men and firms bore the burden of the work, and the subscriptions finally closed at $35,000, all of which was subscribed with the understanding that no call should be made unless the entire $50,000 was secured. The sum was never reached, and the whole enterprise seemed likely to be abandoned.

At this juncture Mr. Theodore C. Search, who had been actively engaged in the effort to raise the $50,000, despairing of success in that direction, concluded to assume the responsibility of attempting the work without the aid of any subscriptions.

Mr. Search's Initiative

The project was made known to the Trustees of The Pennsylvania Museum and School of Industrial Art, who very kindly placed rooms in their school building at his disposal, without charge. Teachers were engaged, two Jacquard looms were ordered, and a night class of enthusiastic students organized in 1883. The outfit was necessarily limited, but was increased without delay, as experience showed the needs to be supplied. Only men of acknowledged skill were engaged as teachers, a fact which greatly assisted the projectors of the enterprise, and won for the School the confidence of the community.

After the School had been in operation for a few weeks, the fact of its actual existence became known to Mr. William Arrott and Mr. Thomas Dolan, who specially requested that they might divide the burden of its expenses with Mr. Search, and at once joined the work. Matters thus rested while the School made most active progress.

Some time afterward at a meeting of the Philadelphia Textile Association, the School project was again discussed, and the Association decided that it would be wise to sustain the enterprise, and recommended the subscribers to the

$50,000 fund to turn over the amount of their subscriptions to its use.

Support of Manufacturers

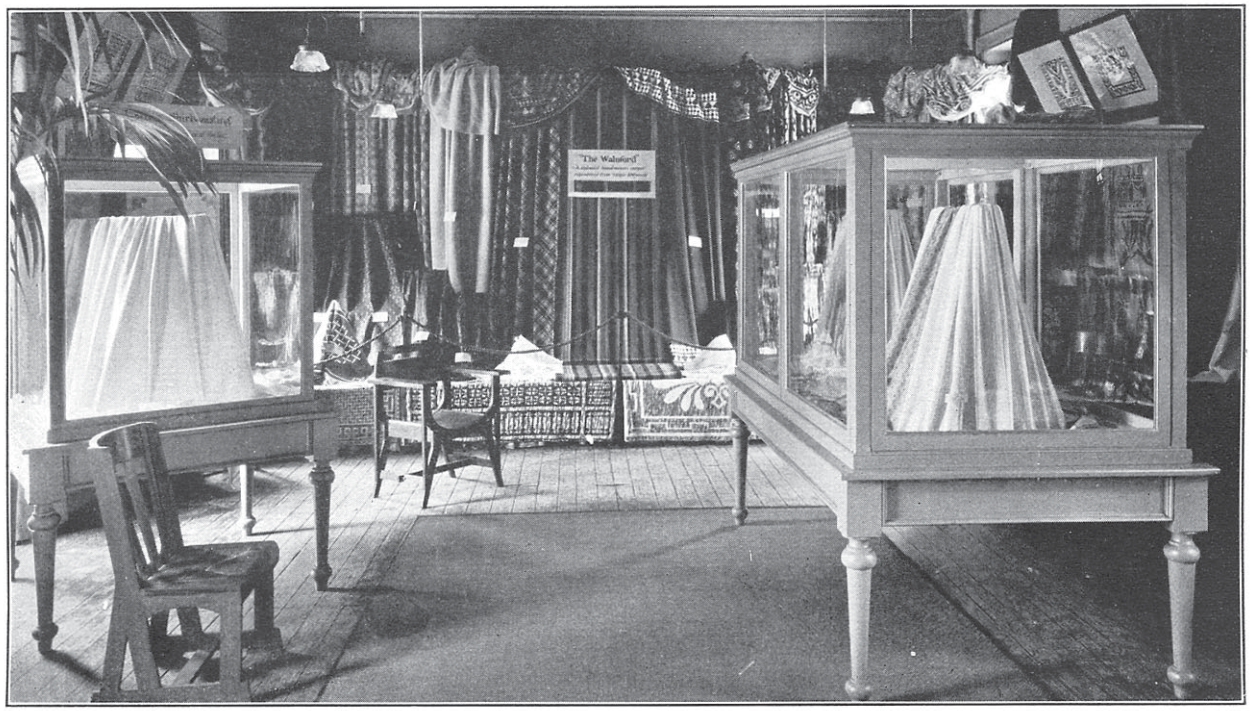
Nearly $30,000 out of the original $35,000 was transferred in this way. That the Philadelphia Textile Association took the action that it did was mainly due to the example and leadership of Mr. Search and a few members who were, like him, fully alive to the importance of the movement, notably, Mr. Thomas Dolan, Messrs. John and James Dobson, Mr. Wm. Wood, Mr. Wm. Arrott, Mr. John Yewdall, Messrs. Fiss, Banes, Erben & Co., Messrs. Conyers Button & Co., Messrs. George and James Bromley, Mr. Seville Schofield, Messrs. Alexander Crow & Son, Messrs. James Smith & Co., Messrs. M. A. Furbush & Son, Messrs. John Bromley & Sons, Mr. Thomas L. Leedom, Messrs. James Doak, Jr., & Co., Messrs. Charles Spencer & Co., Messrs. H. Becker & Co., Mr. Andreas Hartel, Messrs. S. B. and M. Fleisher, Messrs. Grundy Bro. & Campion, Messrs. H. W. Butterworth & Sons, and Messrs. Stead & Miller.

The following season, Mr. Wm. Platt Pepper, then President of The Pennsylvania Museum and School of Industrial Art, undertook to raise funds for the erection of a building to house the new School. He succeeded, within a few days, in securing the amount needed; the building was completed in the early fall, in time for the new school year.

The leading manufacturers of machinery responded very generously to an appeal to supply the institution with the very best machinery; and the evening class of 1884–85 was progressive and enthusiastic, acknowledging the great benefit they derived from their connection with the School.

In September, 1885, the instructors were regularly engaged to give their whole time to the School, and a day class was organized, specially to prepare young men for the higher departments of the work, by means of a regular course of instruction, extending over a period of three years.

The season of 1885–86 was prosperous, and proved conclusively that such a school must not only be a great addition to a manufacturing community like Philadelphia,



ONE OF THE EXHIBITION ROOMS SHOWING STUDENTS' WORK

but an element of strength to the whole country. Friends of the enterprise visited the best schools of Europe in the interest of this institution, and whenever methods were found superior to our own, they were unhesitatingly put into practice, until to-day the management feel that they are entirely ready to supply the want that has so long been pressing on the country.

Instruction

The School aims to make the instruction as practical as possible without losing sight of the fundamental principles which it is the main business of all education to impart. The instruction consists of lectures and class exercises, of individual investigation and experiment, and the actual production from its raw material to the finished product of a great variety of textiles. These latter are brought out in commercial proportions according to the student's ideas and in accordance with specifications which he has himself planned in minute detail, the constant endeavor being to encourage originality and to direct research along profitable lines.

Facilities

The Institution possesses an extensive equipment unsurpassed by that of any similar institution in the world. It consists of the latest machinery for the manufacture of yarns, for weaving, finishing and dyeing. All of these machines are of commercial proportions, not mere working models, and they turn out work such as is met with in the best markets of the day. In addition to this practical equipment the different departments are provided with the apparatus necessary for conducting scientific tests and examinations of fibres, yarns, fabrics, dyestuffs, oils, waters, etc., with a view to locating the cause of possible defects. The buildings in which the School is housed are admirably suited to its purposes, affording light in quantities sufficient for the finest work, the top floors being skylighted throughout.

Scope

The breadth of the School's scope is the factor to which is due the greatest measure of its success. Silk, cotton, wool and worsted are

studied exhaustively, and while some of the courses of study are so arranged that a student may confine his attention to the particular fibre in which he is most interested, the Regular or Diploma Course includes work in all of the materials mentioned above, allowing the student to specialize to a certain extent in the third year. Unquestionably the graduate of this course is fitted for better work in any one of these materials, because of a knowledge of the peculiarities and processes involved in the others. The best time to specialize is after a broad foundation has been laid.

The graduates who are most successful are those who have taken this comprehensive course, even though they may not have pursued it for the three years which its completion requires.

Day and Evening Classes

The organization consists of two distinct schools—day and evening. The course in the former requires the daily attendance of the pupil and involves a good deal of work outside of school hours, so that successful pursuit necessitates the giving up of other duties, although students of special subjects may take partial time in the School and attend to outside duties at other times.

The hours of the evening school are so few that the student's attention is necessarily confined to two or three subjects; the studies are, therefore, largely elective, although earnest effort is made to group these electives in the most profitable manner.

Students

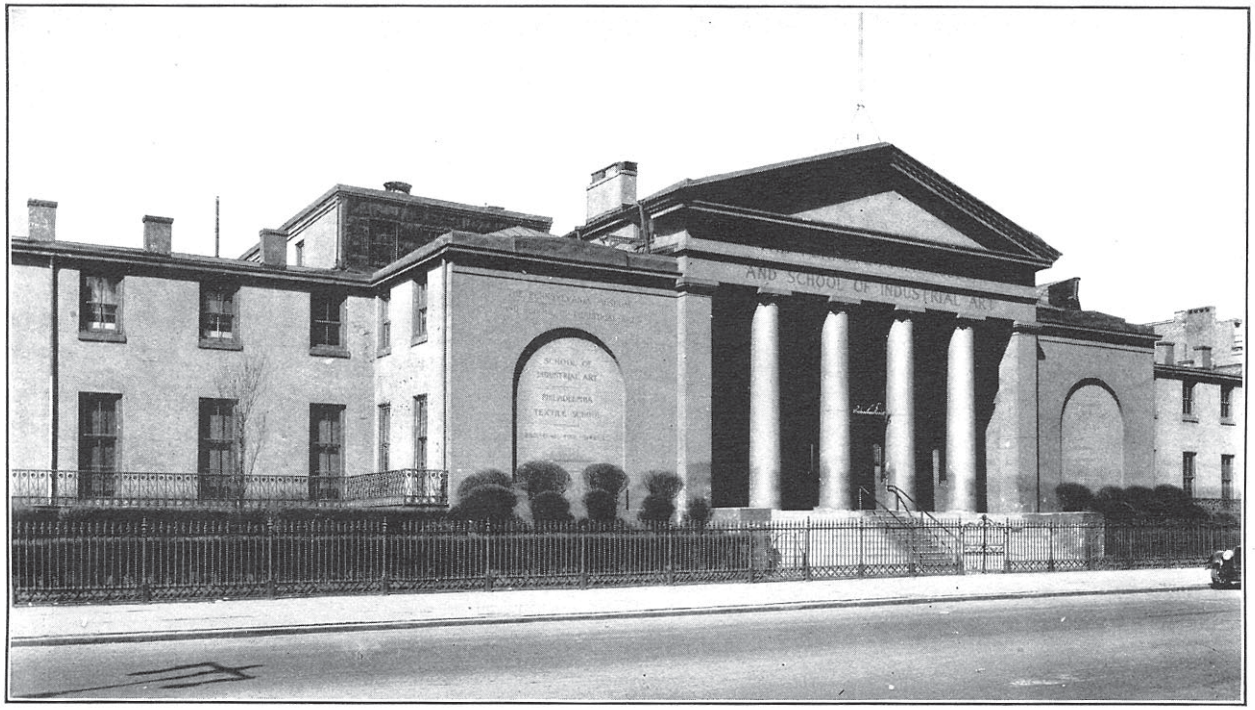
The students of the day school come from all parts of the world. Some of them have had practical experience, and others come directly from schools and colleges, the latter having been largely represented in recent years. The advantages of a good preliminary education in enabling the possessor to obtain a quicker and better grasp of principles and to develop them to better purpose, are, of course, very great, but bright men who have had mill or commercial experience and only a portion of the High School course, often make admirable students, even without the advantages of a complete high-school prep-

aration. The students of the evening classes are, as a rule, engaged in some form of textile work, either manufacturing or commercial. Many of them come from a considerable distance.

Success of Graduates

The Philadelphia Textile School demonstrated the practical utility of technical education in textiles on this continent, and the steady growth of the Institution is due to nothing else, so much as to the success of its graduates. The broad and thorough educational policy steadfastly adhered to by those who shape the School's character, has resulted in the graduation of a body of young men who by reason of the breadth of their training have been enabled to enter all fields of the work, and to-day they are well and favorably known in every textile section of any importance. They are in the mill, the dye-house, the commission house, and the machine builders, and wherever found they are proving themselves capable men and an honor to their alma mater.

The School does not undertake to find positions for its graduates, but inquiries for bright, energetic, well-trained men, are constantly being made, and it affords the officers only pleasure to furnish the assistance to employer and graduate, which introduction implies.



MAIN ENTRANCE TO THE INSTITUTION

Courses of Study—Day School

The school offers to prospective day students the following carefully prepared courses of instruction, each of which has been organized with a distinct purpose.

DIPLOMA COURSES

CERTIFICATE COURSES

ENTRANCE REQUIREMENTS

The minimum age for admission to all courses is eighteen years.

DIPLOMA COURSES—Three Years

Candidates for admission to the Diploma Courses may present a diploma or a certificate of graduation from an accredited high school having a four-year course of study, which includes the 8 units listed below; or from a recognized academy of equal rank; or they may offer certification of fourteen college entrance units as defined by the National Conference Committee on Standards of Colleges and Secondary Schools. The unit represents approximately 120 sixty-minute hours devoted, in one school year, to lectures and class work in a subject which requires preparation out of class. Unprepared work, such as drawing, manual training and laboratory work, counts for half as much as subjects requiring preparation.

The fourteen units should include the following studies with the units set opposite them:

Algebra	1	Geometry	1
English	3	History	2
		General Science or Physics	1

the balance being made up of any regular high school subjects.

A maximum of two entrance conditions is allowed, with the understanding that they shall be removed by the student by the end of his first year.

In addition to the above, each applicant is given a test in arithmetic, including fractions, decimals, percentage, proportion and square root. Proficiency in these subjects is an essential, as they are employed in all forms of textile calculations. The attention of candidates from colleges and universities is especially directed to this fact, and a thorough review of arithmetic is urged.

The date for the entrance Arithmetic Test for all courses is Monday, September 13, at 9 A. M.

Class work starts promptly on the day scheduled. The studies are such that much is lost by the student who is not present at the opening sessions.

Delay in gaining admission to the classes may be avoided by filing applications well in advance of the opening day, so as to afford sufficient time for the securing of certification of credentials.

CERTIFICATE COURSES—Two Years

Applicants for admission to the Certificate Courses should possess the qualifications as prescribed for admission to the Diploma Courses. If they are deficient in the stated number of college entrance credits, they may present evidence of practical experience (either manufacturing or mercantile), which may be accepted as a substitute for deficiencies in academic preparation, if in the judgment of the Committee on Entrance the practical experience is such as to permit the applicant to attain satisfactory results in the course of study in question. Each case of this kind is given individual consideration.

In addition to the above each applicant is given a test in arithmetic, including fractions, decimals, percentage, proportion and square root. Proficiency in these subjects is

an essential, as they are employed in all forms of textile calculation.

APPLICATION FOR ADMISSION—Day School

Application blanks may be obtained upon request, and should be filled out and returned at least two weeks prior to the beginning of the school year, to allow sufficient time for the certification of entrance credits.

Blank certificates for previous school records are furnished with the application blanks, and should be filled out by the Principal of such school and mailed by him to the Director of the Philadelphia Textile School.

(Application for admission to Evening School, see page 101.)

TUITION AND OTHER FEES—Day School

For Evening School Fees, see page 101

The tuition and other necessary fees for Diploma and Certificate Courses, with the exception of the course in Chemistry, Dyeing and Printing, aggregate per year the sum of $315, divided as follows:

Tuition (see Note below)	*$285
Deposit (see page 30)	20
Locker Rental (see page 30)	2
Athletic and Club Dues (see page 37)	8
Total charge	$315

*An Incidental Fee of $15 was formerly required from all students whose course included carding, spinning, weaving, chemistry, dyeing, printing or knitting. This Fee has now been merged in the Tuition Fee.

The deposit (see page 30) for the Chemistry, Dyeing and Printing Course is $35, making the total fees for this course $330.

In addition to the fees noted above, a matriculation fee of $5, payable at time of taking entrance arithmetic test, is charged all new students.

Note.—Tuition fee for students from foreign countries is $385, *making total payment* $415.

PAYMENTS

About three-fifths of the tuition fee ($185) is payable in advance; the balance on or before February 1st of each year. Students failing to make this latter payment at the specified time will be excused from class until payments can be made. (No bills will be sent.) The charge for locker rental, club dues and deposit fee is also payable in advance. Students' tickets are issued by the registrar on the payment of fees, and students will not be admitted to any class until fees have been paid and the proper ticket obtained. In no case will fees be refunded except by special action of the Executive Committee.

DEPOSITS—Day School

All students in the Day School, with the exception of those enrolled in the Chemistry, Dyeing and Printing Course, make upon entering the School, a deposit of $20. From this amount there is a fixed charge of $2 for those whose course includes Elementary Chemistry or Qualitative Analysis, and a charge of $4 for those whose course in addition, includes Dyeing. These charges are made to partially cover the cost of yarns, special chemicals, laboratory locker and materials in general supplied for experimental purposes.

The deposit for students of the Chemistry, Dyeing and Printing Course is $35, from which is deducted a fixed charge of $7 to partially cover cost of special chemicals, yarns, laboratory locker rental and other materials generally supplied for experimental purposes. After deducting the regular glassware breakage, or any damage to school property, the balance is returned at the end of the school year.

Should the periodical examination of accounts show, that the cost in breakage for any individual student is liable to exceed the deposits made, additional deposit will be requested, and credit for supplies withheld, until deposit is received.

LOCKER RENTAL

Students of the Day School also make a deposit of $2 for a locker key, of which amount 50 cents is refunded upon the return of the key, the balance, $1.50, being retained as rental for the use of the locker. Keys will not be redeemed unless presented within thirty days after the close of the current school year.

SCHOLARSHIPS

Moderate assistance toward payment of tuition in this institution is made by the Board of Public Education of the City of Philadelphia. Pupils of all the City High and Manual Training Schools are eligible for these appointments, nominations for which are made by the Board of Education on the recommendation of the Principals of the several schools, to whom all applications for them should be addressed.

THE EMILIE M. CRANE MEMORIAL SCHOLARSHIP FUND

Through the will of Mr. John A. Crane a fund is provided to be known as the Emilie M. Crane Memorial Scholarship Fund. The income from this fund may be used for the assistance of students, fully qualified candidates from the advanced classes to receive first consideration.

WILLIAM WOOD FOUNDATION FUND

Mr. William Wood's sustained interest in the Textile School that he originally helped to establish, has recently impelled him to turn over certain funds, a portion of the income from said funds to be used to assist deserving students (Day or Evening School), in the payment of their tuition. The income is disbursed on the recommendation of the Director.

SARAH T. WISTER BEQUEST

Through the will of Mrs. John T. Wister, for years an active member of the Associate Committee of Women to the Board of Trustees of the Corporation, a Trust Fund has been provided, to be known as the Sarah Tyler Wister Prize Fund. The income from this fund to be dispersed for proficiency in the Textile School, awards from this fund to be made only at the discretion of a special Committee, appointed for the purpose.

THE LOUIS S. STROOCK FUND

Through the generosity of Mr. Louis S. Stroock, of New York (Recently Deceased), there will be available for the scholastic year beginning September, 1926, a limited amount of money, from which fund advanced students may borrow toward payment of their tuition. Candidates for this privilege must not only prove their ability to profit by the instruction given, but, in addition, satisfy the Director of the School that such an accommodation is necessary for further continuation of studies.

HOURS OF STUDY—Day Classes

From Monday to Friday, inclusive, all classes are in session from 9 A. M. until 12 noon, and with the exception of the second and third year classes in Warp Preparation and Weaving, they are in session from 1 P. M. until 4 P. M. The afternoon sessions in the second and third year in Warp Preparation and Weaving continue until 5 P. M. The hours of study on Saturday are from 9 A. M. until 12 noon.

The Second Year Regular, Second Year Wool and Worsted, and the third Year Regular Day Classes are also required to attend the course of lectures on Cloth Finishing and those on Wool Selecting, Grading, Sorting, Blending, etc., in accordance with announcements made during the year.

CONDUCT

It is assumed that students come to the School for a serious purpose and that they will cheerfully conform to such regulations as may be from time to time adopted by the Faculty.

The organization and discipline of the School require from all students a strict observance of the following regulations:

Punctual and regular attendance, polite and orderly conduct, constant and steady application to their allotted work in the various classrooms and laboratories, the return of all tools, materials, chemicals and apparatus in good order to their proper places before leaving the classrooms. Conduct inconsistent with the above, or with the general good order of the School, or persistent neglect on the part of the student to furnish or produce required work, or loitering in the hallways or wasting his time in any other manner, may be considered as sufficient grounds for dismissal, without remission of fees—or if the offence be a less serious one, the student may be placed upon probation. The student so placed upon probation may be dismissed if guilty of any further offence. Schedules showing the arrangement of classes and the hours to be given by the instructors to each are posted in conspicuous places. Students must observe these schedules and may not claim the teacher's attention at other hours.

It is the aim of the Faculty to so administer the discipline of the School as will encourage students to cultivate

habits of steady application, self-control, as well as a high regard for honor and truthfulness. The attempt of any student to pass an examination by improper means will be regarded as a most serious offence, and renders the offender liable to immediate expulsion without further redress.

No book, chart, or other educational appliance which is the property of the School, will be allowed to leave the building under any circumstances.

REPORTS OF STANDING

Reports of students' standing in all subjects taken in his course are made to parents and guardians quarterly. The ability of students to continue their courses is determined in part by means of examinations, but regularity of attendance, and faithfulness to daily duties, are considered equally essential, and will be so considered.

EXAMINATIONS

General examinations are held in all branches each year in January and in May, known as "midyear" and "final." The January examinations are usually confined to the work of the first half of the year. The May examinations may cover the work of the whole year.

NOTE.—Examinations for students conditioned in May in subjects of the first and second year are held on Monday preceding the opening day of the school year, and for those students conditioned in January in the first week of March following.

Students conditioned in any subject and failing to remove the condition at the time appointed, are not entitled to another examination unless further time be allowed by special vote of Faculty.

CERTIFICATE—Day School

Certificates are awarded to students who have completed the first two years of the Regular Three Year Textile Day Course, or the first two years of the Regular Three Year Chemistry, Dyeing and Printing Courses, and to students completing any of the following Regular Two Year Day Courses: Cotton—Wool and Worsted Silk—Figured Design—Dyeing and Color Matching—on the following conditions: A degree of "Excellent," "Good" or "Fair" must have been attained for the work of the Course in each

Note—For evening class certificate, see page 101.

branch taught in the respective classes, and the final examination must have been passed in a satisfactory manner.

DIPLOMAS

The Diploma of the School is awarded to students of the Three Year Regular Textile Day Course, and the Three Year Regular Chemistry, Dyeing and Printing Course, who have obtained the certificate offered for the second year of the course, and who have completed their third year's work in accordance with the conditions outlined under the head of certificates.

NOTE.—No student is eligible for promotion into an advanced class who has not completed in full, the work of the preceding year, including the examinations, in a satisfactory manner.

SCHOOL HONORS—Prizes

The following prizes are offered for competition:

TO THE (REGULAR) GRADUATING CLASS

MEDAL OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The National Association of Cotton Manufacturers of Boston offers a medal to be awarded to such member of the graduating class of this School as may be designated by a special committee appointed for this purpose, who will examine the results of the year's work. The award will be based upon the general excellence of the year's work, and will be determined partly by an inspection of the fabrics produced by the student, coupled with the results of Preliminary and Final Examinations, and partly by consultation of the records of the student's diligence and progress during the year as kept by his instructors.

THE HENRY FRIEDBERGER MEMORIAL PRIZE.

Ten dollars will be awarded to the student of the graduating class who ranks second in general excellence.

SARAH TYLER WISTER PRIZE

Fifteen dollars.—To be awarded to the student of the third year regular day course producing the best executed work in Jacquard Design.

ASSOCIATE COMMITTEE OF WOMEN'S PRIZE

Ten dollars.—To be awarded to the student of the regular third year day class, attaining the highest rating for the year as regards progress and proficiency in the Department of Power Weaving.

THE TEXTILE WORLD JOURNAL PRIZE.

Fifteen dollars.—To be awarded to the student of the third year day chemistry, dyeing and printing class graded as first honors in general excellence.

The Textile World Journal Prize.

Ten dollars.—To be awarded to the third year student of the evening school chemistry and dyeing class who attains the highest rating for the full three-year course.

TO STUDENTS WHO HAVE BEEN IN ATTENDANCE AT LEAST TWO YEARS:

Sarah Tyler Wister Prize

Fifteen dollars.—To be awarded to the regular second year day student producing the best executed fabric from Jacquard Design.

Mrs. Henry S. Grove Prize

Ten dollars.—To be awarded to the student of the second year of the regular day course attaining the highest rating for the year's work.

The John G. Carruth Memorial Prize

Ten dollars.—To be awarded to the student of the second year day wool class attaining the highest rating for the year in general excellence.

The Krout & Fite Mfg. Co. Prize

Ten dollars.—To be awarded to the student of the second year day cotton class attaining the highest rating for the year in general excellence.

The Joseph Elias Prize

Ten dollars.—To be awarded to a member of the second year day silk class attaining the highest rating for the year in general excellence.

The Miss Clyde Prize

Ten dollars.—To be awarded to the student of the regular second year day class, attaining the highest rating for the year as regards progress and proficiency in the Department of Power Weaving.

The Mrs. Jones Wister Prize

Ten dollars.—To be awarded to a member of the second year day silk class producing the best designed and woven Jacquard Silk Fabric.

The Anna E. Sinnott Memorial Prize

Ten dollars.—For student of Second-Year Chemistry, Dyeing and Printing Class attaining the highest rating for the full two-year course.

TO STUDENTS WHO HAVE BEEN IN ATTENDANCE ONE YEAR:

The Mrs. Thomas Roberts Prize

Ten dollars.—For highest rating in the Regular Course, First Year.

The Delta Kappa Phi Fraternity Prize

Ten dollars.—To be awarded for the best general work executed on the Harness Loom, by a student of the first year day class.

The Phi Psi Fraternity Prize

Ten dollars.—For best executed work in Color Harmony and Design. Open to members of first year day classes.

The Delta Phi Psi Fraternity Prize

Ten dollars.—For general excellence in weave formation and fabric analysis. Open to members of first year day classes.

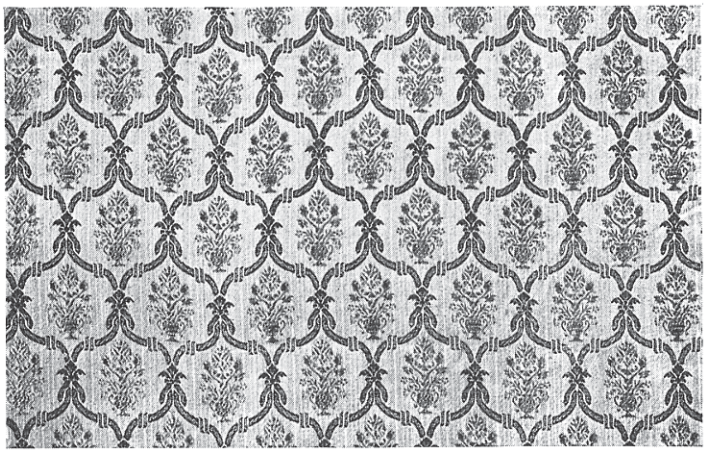
The Sigma Phi Tau Fraternity Prize

Ten dollars.—To be awarded to the student of the first year day chemistry and dyeing class attaining the highest rating for the year's work.

The Joseph Elias Prize

Ten dollars.—To be awarded to the student of the first year evening Jacquard class attaining the highest rating for the year's work.

SPECIMEN OF FABRICS PRODUCED BY STUDENTS



BROCADED SILK IN THREE COLORS FROM SEVENTEENTH CENTURY MOTIF

Made of pure dyed organzine warp, and tram filling
All the details of manufacture, including designing, dyeing, warping and weaving, performed by the student

WORK OF STUDENTS

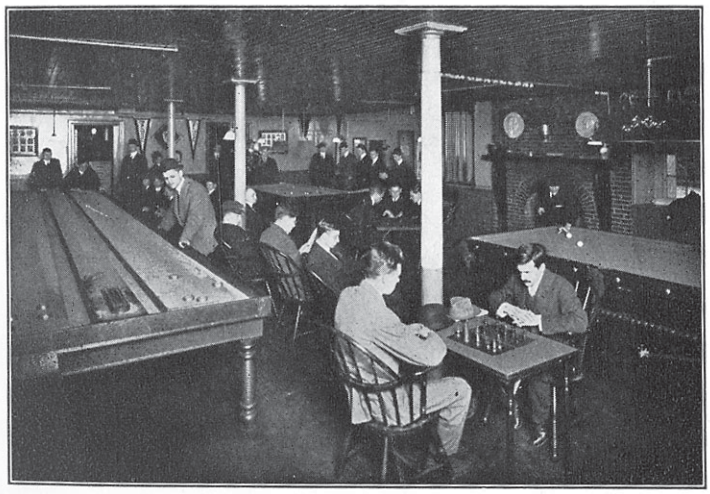
All fabrics woven in the School become the property of the institution. The School also reserves the right to retain one specimen of each student's work in each branch studied.

TOOLS AND MATERIALS

The tools required in the Regular Course, Woolen Course and Cotton Course are: A set of drawing instruments, a drawing board, a pair of pliers, a pair of scissors and a reed hook. All books, tools and also materials, such as designing paper, paints, brushes, drawing boards, drawing instruments, pencils, etc., are for sale in the School at less than retail prices. The expense of these is usually about $50 for the first year. All students of the School are expected to provide themselves with a full suit of overalls.

BOARD

Good board may be obtained in the vicinity of the School. A list of desirable boarding houses can be obtained upon application to the Central Branch Y. M. C. A. of Philadelphia.



STUDENTS' CLUB ROOM

SOCIAL FEATURES

The Art and Textile Club, to membership in which any student of the School is eligible, is the exponent of the social and athletic side of the school life; and is conducted and supported by and for the students.

Its equipment includes a general club room with files of textile and other periodicals; tables for chess and checkers; also pool tables of standard make.

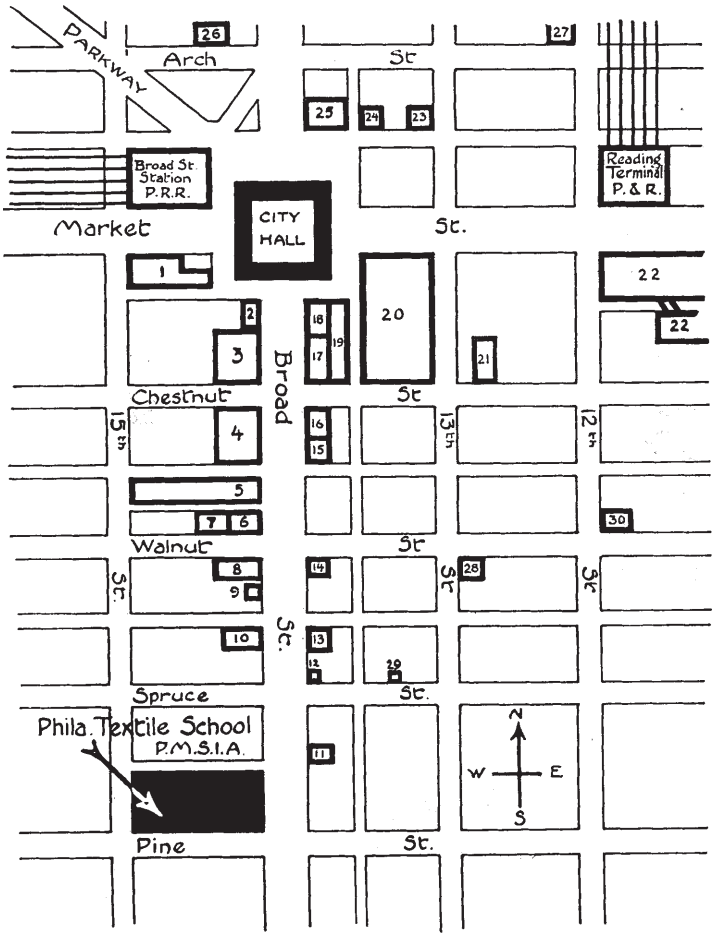
The membership fee is $8 a year, and is collected by the Registrar of the School from Textile day students when registering for the year.

LOCATION OF THE

PHILADELPHIA TEXTILE SCHOOL

OF

THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART



1	Commercial Trust Co	16	Real Estate Trust Co
2	West End Trust Co.	17	Liberty Bldg
3	Girard Trust Co	18	Lincoln Bldg
4	Land Title & Trust Co.	19	Widener Bldg
5	Union League Club	20	Wanamaker Store
6	Manufacturers Club	21	Adelphia Hotel
7	Stock Exchange	22	Snellenberg Store
8	Bellevue-Stratford Hotel	23	Hotel Vandig
9	Art Club	24	Bulletin Bldg
10	Academy of Music	25	Masonic Temple
11	City Club	26	Y.M.C.A.
12	Hotel Stenton	27	Hotel Hanover
13	Hotel Walton	28	St James Hotel
14	Ritz Carlton Hotel	29	Engineers' Club
15	North American Bldg	30	Chamber of Commerce

Courses of Study—Day School

IN DETAIL

REGULAR TEXTILE COURSE (Diploma)

This course, which is the development of forty years of active, thoughtful work in textile education, is strongly recommended to all, particularly on account of its scope; tending, as it does, to overcome for the individual the

ONE OF THE LECTURE ROOMS

This is a well-lighted room and is especially intended for work in analysis of fabric, weave formation, color harmony and similar studies

narrowness of knowledge which is apt to result from division of labor and specialization in industry. The keen competition of the present day has placed a premium on the man whose knowledge is broad, and it is in realization of this fact that the Regular Course has been arranged to give full instruction in cotton, wool, worsted and silk yarns and fabrics. The person following this course is enabled, on its

completion, to enter any of the mentioned branches of the industry, and by his knowledge of the others recognize good features in them and adapt these good features to his own fabrics. Three years are required to complete this course, which includes the following:—

Subjects of Study—First Year

WEAVE FORMATION

This subject treats of the construction of the various classes of weaves which govern the manner in which threads are interlaced to form woven fabrics. In this, the first year, the subject is considered in its relation to fundamental and derivative weaves for fabrics, composed of one warp and one filling, up to and including fabrics composed of two warps and one filling, and inasmuch as their use is confined to no one material, their study is common to the silk, cotton, wool and worsted courses. The weaves are studied in their relation to one another, together with their peculiarities of texture, take-up, effect, feel and color possibilities. At the close of the year the student possesses an extensive record of his work, which is continued in the succeeding years of the course. The following gives a general idea of the scope of this year's instruction:

General principles of the structure weaves.—Explanation of "Warp" and "Filling."—Methods of representing weaves on squared paper.—Classification of weaves.—Foundation and derivative weaves.—Plain weave and the methods of ornamenting it.—Methods for constructing the various twill and satin weaves.—Influence of the twist of yarn on the effect of the weave.—Explanation of drafting.—Rules for preparing drawing-in drafts and chain drafts from weaves.—Reducing weaves to their lowest number of harnesses.—Various weaves derived from the "Foundation Weaves."—Methods for their construction.—The various fabrics to which they are adapted.—Circumstances which make it more advantageous to use one class of weaves than another.—Weaves which are suitable for particular classes of fabrics in contrast with weaves for other classes.—Weave combination.—Consideration of "Texture" and "Take-up" in placing weaves together.—Combining weaves to form stripes and checks.—Effect of color on the weave.—One-and-one and two-and-two systems.—Two-and-two and four-and-four applied to fancy weaves.

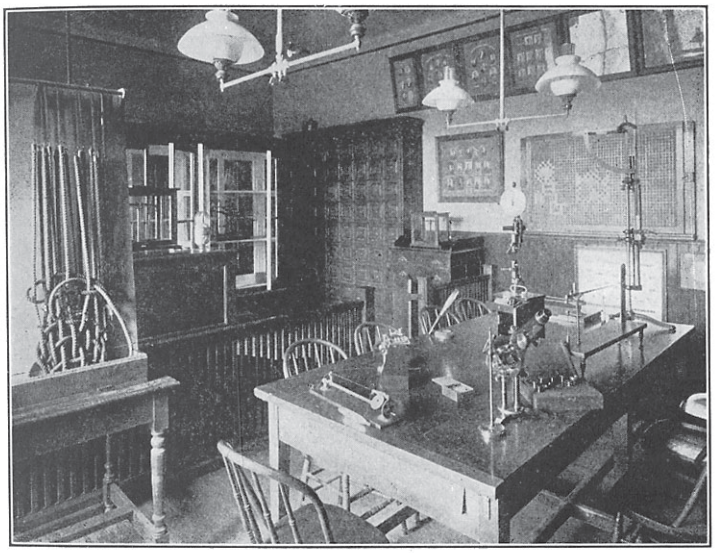
ANALYSIS AND STRUCTURE OF FABRICS

Cotton, wool, worsted, silk and other varieties of yarns and fabrics are carefully investigated and discussed with a view to the formation of desired fabrics. A brief outline of the plan of work is here appended.

YARN CALCULATIONS—Grading yarns with regard to size.—Consideration of the various systems in their relation to one another in

one or more ply threads. The relation of count, weight and length of different threads.

FABRIC ANALYSIS.—Ascertaining the weave, drawing-in draft, chain draft, ends and picks per inch, arrangement of warp and filling colors, counts of warp and filling, take-up in weaving.—Amount of each color and material required in a given length of goods.

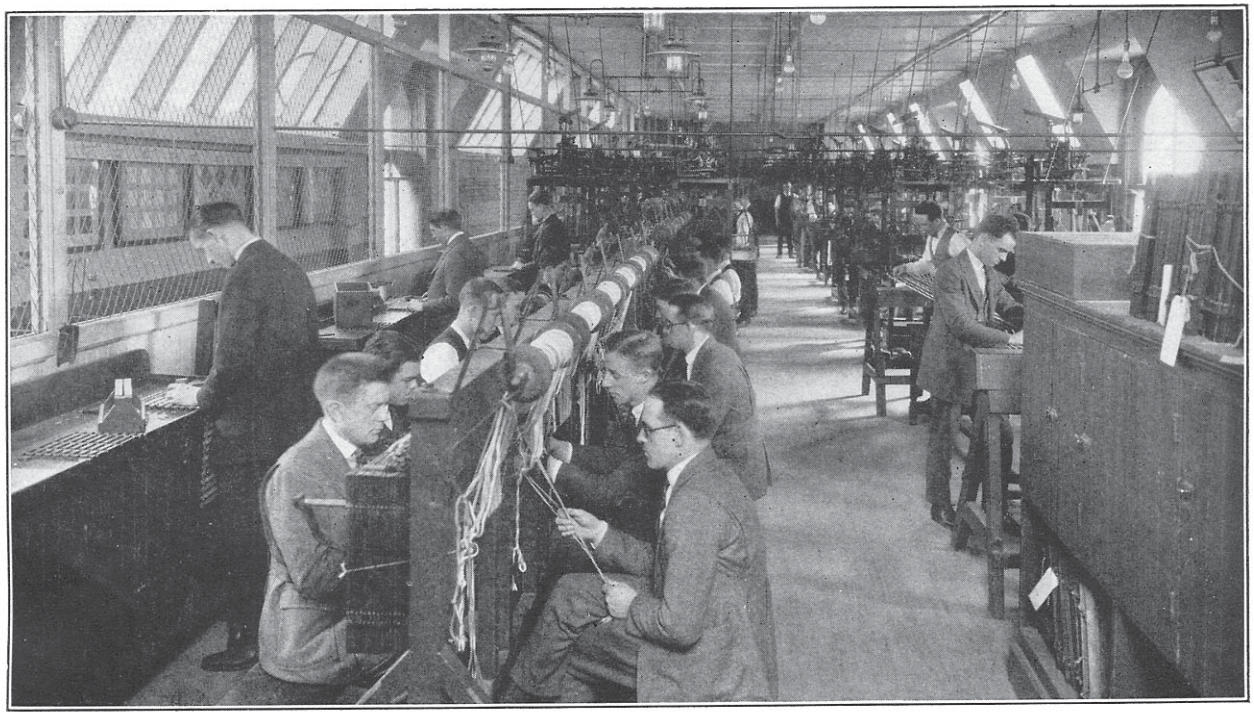


FABRIC EXAMINING AND TESTING LABORATORY

FABRIC STRUCTURE—Is studied in part by observation and deductions based on the results obtained in the thorough analysis of fabrics which may be remarkable for their good or bad qualities. This subject also includes the organization of specifications, designs and colorings for prescribed fabrics, the majority of which are executed by the student, thus enabling him to see the actual result of his thought.

FREE-HAND DRAWING

Looking at a thing does not necessarily indicate seeing a thing. Free-hand drawing taxes the former to insure the latter. So much from a practical standpoint. Furthermore, free-hand drawing cultivates a better taste, which is an essential in all embellishments, and thus becomes a necessity for the appreciation and acquirement of the subsequent studies of figured design, color harmony, etc.



HAND WARPING AND WEAVING ROOM
All operations of Warping and Elementary Weaving are here performed by the students

DESIGN DEVELOPMENT

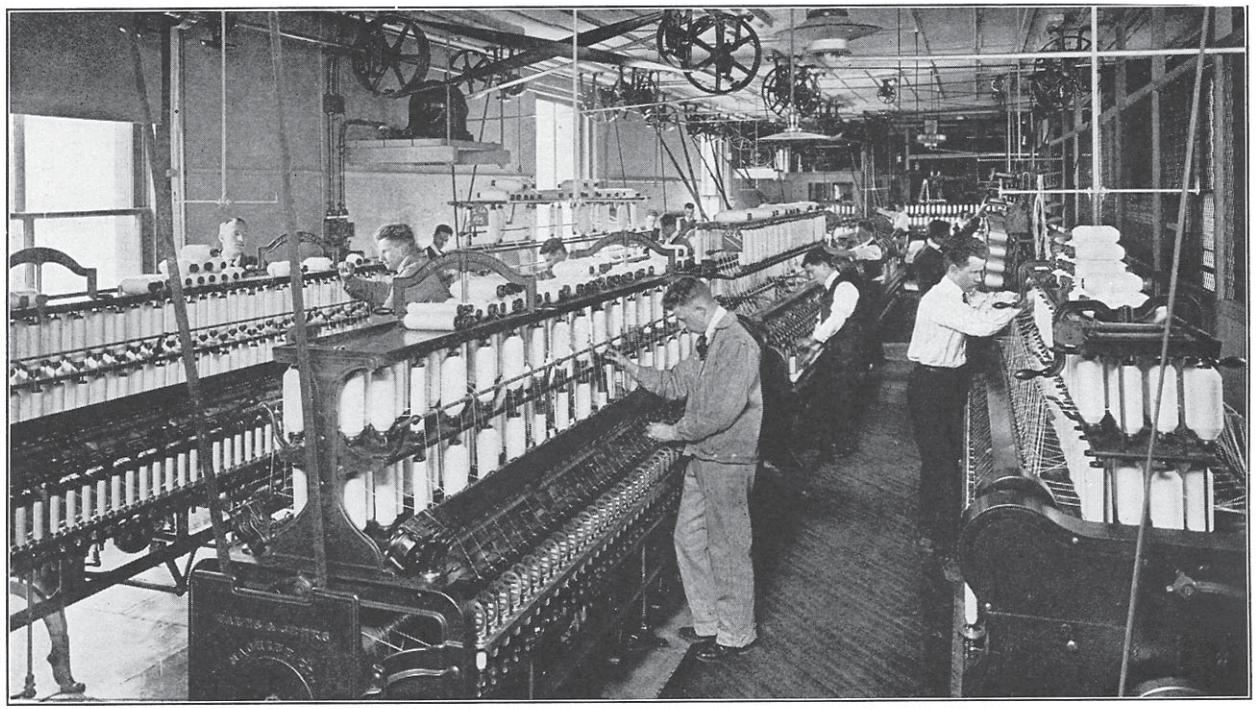
Designing does not simply indicate an indiscriminate decoration, but the exercise of care in the appropriateness of embellishments, whether such be used for the highest flowery design of a carpet or the simple lines of trouserings or shirtings. In textiles this becomes more apparent when we consider not only the decorations and uses, but likewise the markets for which they are intended; hence special attention is paid to original drawings of natural forms, their conventionalization, history of ornament, and theory of color.

TEXTILE COLORING

This subject is one of vital importance to all concerned in the manufacture and marketing of textiles, for, in spite of good design and good fabric, if the coloring is not pleasing the fabric will not sell. A thorough study of this subject, relating entirely to textiles, is a prominent feature of the school's work. While the principles of color are the same, whatever their application, the course of study is so arranged as to bear entirely on yarns and fabrics. Starting out with the raw pigment, and working on paper and in the actual goods, the eye of the student undergoes a gradual and almost unconscious training in the application of what is good and what is bad in color combination. He becomes able to decide not only what colors or shades may be tastefully combined, but also on the relative depths of tone which will be allowable under given conditions and in given combinations. His knowledge of the structure of fabrics and of design enables him to estimate correctly the quantity and quality of the color which will be visible on the face of the goods, and to make correct allowances in his original color scheme for the modifications of effect which these conditions imply.

WARP PREPARATION AND WEAVING

This subject is taught as a means of demonstrating and developing the instruction given in weave formation and fabric structure, and, while keeping this idea in view, due attention is also paid to the giving of a thorough grounding in the underlying principles of weaving and weaving mechanism. Experience has proven that these ends are most rapidly attained by means of the hand loom, and for this reason each student has the use of such a loom of especial construction, with a capacity of 30 harness, 4 x 4 boxes. By means of this loom he produces fabrics, studies the relation of weave, yarn, texture, take-up and cover, together with the proper conditions of warp line, tension, height of shed, throw of shuttle, beat of lay, etc., all of which are under his personal control. In addition to this, all students will be required to devote a certain amount of time to



COTTON CARDING, DRAWING, SPINNING AND TWISTING LABORATORY

power-loom practice, contingent, however, on progress in the foregoing. In general, the work is as follows:

Analysis and explanation of the hand loom.—Various methods of forming the "shed."—Lambs, treadles and countermarch.—Dobbies and witches.—Calculations as to texture and ends in warp, width in reed, etc.—Arranging the threads to form the warp.—Beaming, entering.—Drawing-in, twisting-in and reeding.—Adjusting the warp in the loom.—Pattern chain building.—Weaving on the hand loom of a prescribed number of fabrics of cotton, wool, worsted, and silk.

FIGURED DESIGN

The aim of this study is to adapt the principles taught under the subject of weave formation to the capabilities of the Jacquard machine.

THE JACQUARD MACHINE.—The general explanation of the simpler forms of the machine is followed by the making of drawings of the internal working parts, showing their relation and connection. Comparisons are duly made between the harness shedding motion and the Jacquard.

MOUNTING.—The French and English systems of mounting or tying-up are thoroughly explained. Combinations of the various orders of these systems are made in actual practice, as well as calculations for the laying out of textures in the comberboard..

DESIGNING.—The making of sketches for various textures and tie-ups.—The use of squared design paper.—Principles of enlarging sketches.

CARD STAMPING.—The principles of card stamping and lacing.—Fingering for French, American and fine index stamping machines.—Card-stamping directions.

COTTON YARN MANUFACTURE

The chief advantage of school training in this subject does not lie in the actual operation of machines, but rather in the knowledge of how to adjust the parts of the machines to suit varying conditions necessitated by different lengths of fibre and counts of yarn, in order that the machines may be run to the best advantage. The use and structure of each portion of the machines are studied in their relation to the other parts with reference to their effect on the product. Starting with the desire to produce a certain yarn, all the necessary calculations of speed and delivery are made, so that the proper amount of work may be done at each operation and the fibre handled with the least amount of injury and waste. The knowledge of how to blend fibres and produce yarns makes the person who is also familiar with designing and weaving exceptionally valuable, either as designer, as overseer of weaving or of carding and spinning, or

in those positions in which men are expected to superintend all three of these operations. The following is an outline of the scope of the subject:

VARIETIES OF COTTON.—Their characteristics and uses.—The adaptation of various cottons to different classes of work.

PREPARATORY PROCESSES.—Bale breakers.—Mixing lattices.—Openers.—Intermediate and finisher pickers.

CARDING.—The theory of carding carefully studied.—Brief outline of the various methods of carding, with a thorough study of the construction and working of revolving flat cards.—The necessary settings and adjustments, together with calculations for all changes in the speeds of the different parts.

CARD CLOTHING.—The essentials of good carding.—The principles of grinding and the practical accomplishments thereof.

COMBING.—The process briefly outlined, showing its use and place in the order of operation. Considered fully in the second year.

RAILWAY HEAD.—Its functions and advantages.—Calculations for necessary changes.

DRAWING.—The object of drawing.—Functions of the drawing frame.—Different types of frames in use.—Rules for all changes.

FLY FRAMES.—Slubbers.—Intermediates.—Fine roving frames.—Their functions, similarities and differences.—The theory of winding.—Differential motions of Holdsworth, Tweedale, Daly, and others.—Rules and calculations for changes.

SPINNING.—The theory of spinning.—The mule and ring frame.—Spindles, travelers, rings, builder motions.—Calculations for draft and twist, and production.

Note.—The course is conducted by means of lectures, recitations, quizzes, essays, abstracts and practical work upon the machines. Winchester's "Theory and Practice of Cotton Yarn Manufacturing" is used as a text-book.

CHEMISTRY

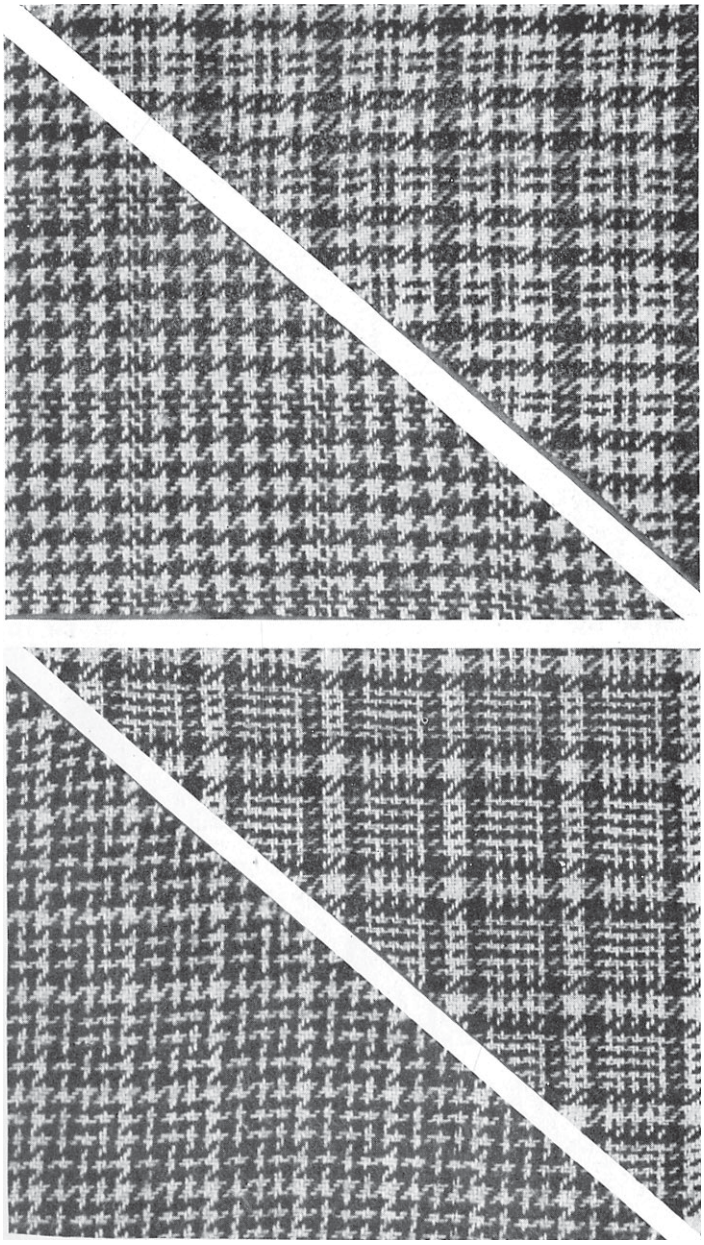
The subject of Chemistry taken up in this, the first year, consists principally of lectures and recitations, covering the fundamentals of Inorganic Chemistry.

Subjects of Study—Second Year

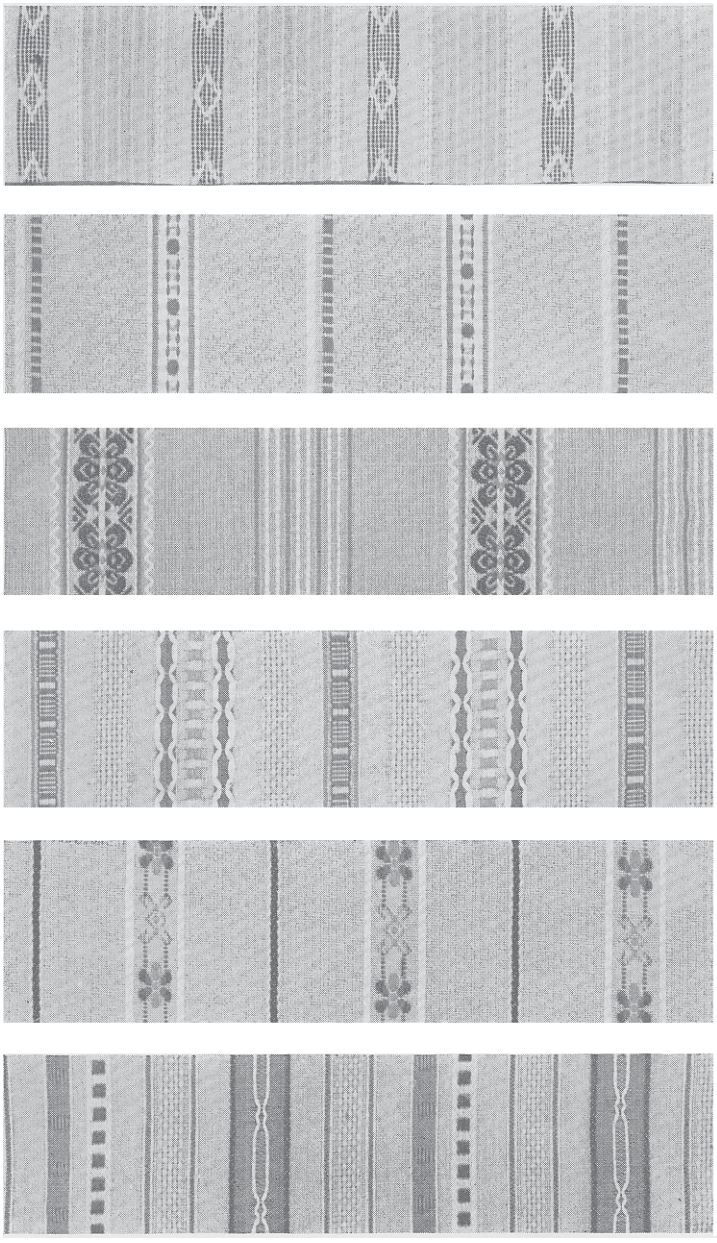
WEAVE FORMATION

The instruction in this subject given in the second year may be said to embrace an application to heavier and more complicated fabrics of the weaves studied in the first year. The work in general is confined to double weaving—that is, weaves for fabrics composed of two systems of warp and of filling—and its treatment is general in its application, including fabrics of silk, cotton, wool and worsted. The following is a brief statement of the matter covered:

An extra filling added to weaves.—Figured effects produced by floating the extra filling on the face.—Figures produced by so stitching the extra filling as to produce light and dim effects.—Single-faced and double-faced fabrics produced by using an extra filling.—Extra filling for adding weight to a fabric. The addition of an extra warp.—Single and double-faced fabrics produced by using an extra warp.—The use of an extra warp for figuring on



SPECIMENS OF ELEMENTARY CLASS PRODUCTION SHOWING INFLUENCE OF COLOR TREATMENT ON WEAVE



THE ABOVE ARE TYPICAL SPECIMENS OF COTTON, SILK AND RAYON FANCY DRESS AND WAISTING MATERIALS, PRODUCTION OF SECOND YEAR CLASSES

the face.—Increasing the weight by the use of an extra warp. Proper methods for stitching the back to the face.—Effect of improper stitching.—Imperfect cloth resulting from the same.

Value of a knowledge of double cloth weaves.—Methods of constructing double cloth weaves, and of indicating them on designing paper.—Consideration of the various proportions of face and back, such as one face and one back, two face and one back; three face and one back.—Also those on which the warp and filling have not the same arrangement, such as one face and one back in warp, and two face one back in filling; two face one back in warp, and one face one back in filling and other irregular arrangements.—Rules for stitching double cloth weaves.—Invisible stitching.—The production of figures by means of the three-color striped weaves.—Double plain weaves for reversible figured effects.—Weaves for such special fabrics as Bedford cords, dotted Swisses, plaid lawns, piqué, figured piqué, Marseilles, coatings, matelassés, face-finished fabrics, beavers, kerseys, meltons, tricots, chinchillas, etc.—Longitudinal and diagonal-rib.

ANALYSIS AND STRUCTURE OF FABRICS

Cotton, wool, worsted, silk and other varieties of yarns and fabrics are considered on somewhat the same plan as in the first year, but by means of more advanced problems.

YARN CALCULATIONS embrace a study of the shrinkages which are encountered in the various operations of weaving and finishing, in their effect on the resulting fabrics.—The selection of proper yarns for required weights of goods and for given textures.

FABRIC ANALYSIS is followed largely in double cloths, and, in addition to the points looked for in the first-year analysis, the student is brought in contact with the question of two or more warps and fillings in the one piece. He thus includes in his research the question of different shrinkage and losses, and in his estimate the quantity of materials necessary for a given finished piece of goods.

FABRIC STRUCTURE.—In planning and calculating on the necessary specifications for the correct structure of fabrics, in this the second year of the course, the student not only steps from single to double cloths, with the consequent augmentation of details, but he is also brought to a consideration of the subject of texture. He is required to decide upon the proper number of warp and filling threads for the weave to be used, and to make all necessary allowances for ease in weaving and for shrinkages after being woven. Hence, a careful study of the question of volume or size of threads is essential, particularly in relation to the interlacings of the different weaves. The actual production of the fabric in all its details by the effort of the student lends much to the value of the theoretical knowledge gained.

FIGURED DESIGN AND TEXTILE COLORING

The purpose of the consideration of this subject, in addition to adapting the principles of weave formation to the machine, is to expand into broader and more varied effects the work of the first year. Color, being such an adjunct in the making of figured effects, is here applied to assist in bringing out the designs.

THE JACQUARD MACHINE.—The use of various types of machines, to attain speed and easier action on the warp, are explained, and drawings of the construction of their internal parts made. Such machines are treated as follows:

Rise and fall.—Double lift, double and single cylinder.—Auxiliary cylinder and twilling machines.—Substitution of trap-boards and tail-cords for hooks and griffe bars.—Substitution of journals for comberboard.

MOUNTING.—The various tie-ups for the working of two warps and extra figure warps are explained, comberboards threaded and calculations made for all necessary particulars for the placing of such forms in the loom as—

Section ties.—Repeated effects in one repeat.—Combinations of straight and point ties for table covers and curtains, etc.—Placing of extra sections in front for striped effects.

DESIGNING.—Cloth-size sketches, in the colors to be used in the woven fabric, are made, and enlarged upon squared design paper, in order that the various applications of weave to produce effects can be studied in a practical form. Designs are worked out in this manner for different textures and tie-ups for—

Cotton and silk derbies.—Reversible draperies.—Blankets.—Figured dress goods.—Fine, super-fine and extra super-ingrain carpets, and various double cloths.

CARD CUTTING.—Card stamping is done from designs made by the students for the various fabrics, in accordance with principles laid down in the first year's work. Students are required to cut and lace cards from their own designs, using both French and American index cutters.

WOOL AND WORSTED YARN MANUFACTURE

In this year, the second of the course, the student studies the subject of "wool" and its manipulation into yarns, largely on the same general lines as that laid down for cotton yarn manufacture, outlined in the first year of the course. Particular attention is paid to the study of what is commercially called the "raw material" (the wool fibre and the by-products of wool) and the mechanical functions of the various machines used in processing the material prior to spinning. The following is an outline of the scope of the subject:

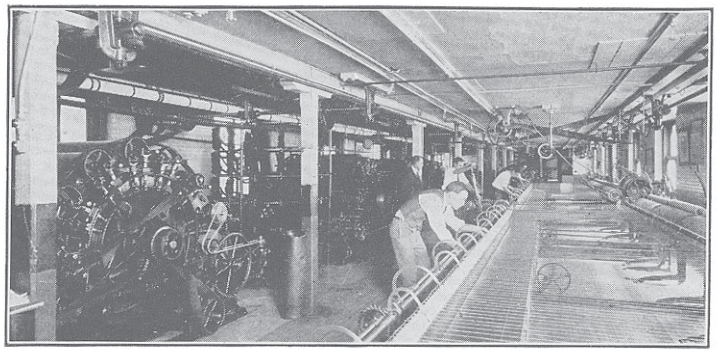
RAW MATERIALS OF THE WOOL INDUSTRIES

The wool fibre.—Structure.—Properties and characteristics.—Classes of fleece wool.—Merino types.—Territory wools.—Wools from British breeds.—Longwool and medium wool.—Crossbreds.—Carpet wools.—Necessity for grading and sorting.—Various qualities in fleeces.—Skirting.—Mill methods of designating sorts.—Comparative wool grades.—Sorting tests.—Grades of wool from various breeds of sheep.—Cause of shrinkage.—Shrinkage of various wools.—Shearing.—Preparing.—Marketing.—Pulled wools.—Source of supply.—Methods of pulling.—Uses.—Distinction between hair and wool.—Mohair.—Alpaca.—Vicuna.—Llama.—Cashmere.—Camel hair.—Horse hair.—Wool substitutes and waste products.—Importance and necessity.—Essential requirements in raw materials for manufacturing.—Text Book: "The Raw Materials Used in the Wool Industries," by S. H. Hart, will be used.

Note.—Wool scouring and drying considered under Chemistry and Dyeing.

WOOLEN YARNS

PREPARATORY PROCESSES.—Burring and picking.—Consideration of the various burring and picking machines in general use.—Preparation of mixes and methods adopted in laying down mixes according to desired percentages.—Oiling the mix.—Testing and selection of oils.



WOOL CARDING AND SPINNING

CARDING.—Theory of carding.—Explanation of the term "set of cards."—Names and uses of the various rolls and cylinders.—Truing up of cylinders.—The necessary settings and adjustments, together with calculations for changes in the speeds of the different parts.

CARD CLOTHING.—The essentials of good clothing.—Construction, classification, and uses.—Methods of clothing the various rolls and cylinders.—The principles of grinding and the practical accomplishments thereof.—Frame, traverse and roll grinders.

FEEDS.—Hand, ball, creel, and automatic feeds carefully considered.—The construction and adjustments necessary for the satisfactory operation of the Bramwell, Apperly, Scotch, Tindel, Fischer, etc.

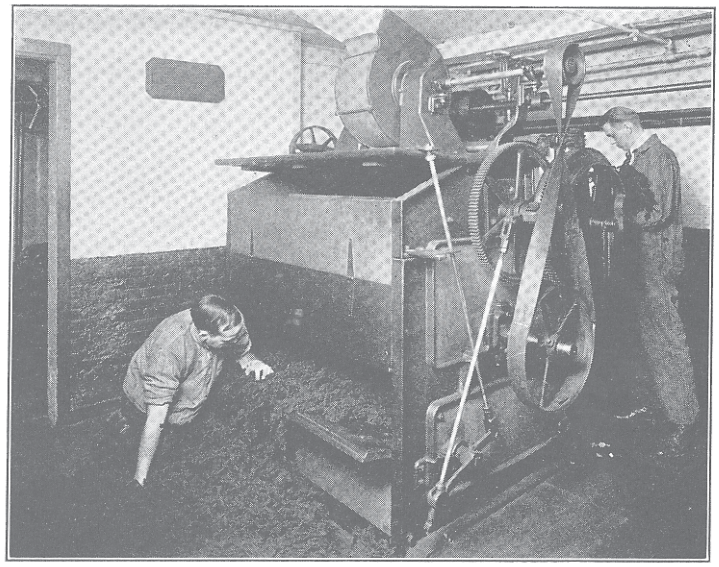
CONDENSERS.—The various forms of condensers in general use.—Ring system.—Single and double doffers.—Bolette single doffer.—Steel blade dividers.—German single doffer strap dividers.

RUBBING MOTIONS.—Rolls.—Aprons.—Aprons and rolls combined.—Single, double and quadruple bank apron rubbers thoroughly studied, together with the methods and appliances used in the making of the various woolen novelty yarns.

In addition to the above a limited amount of machine sketching and drawing is required, so that by thus supplementing the lectures and practical work in carding and spinning of wool, and the drawing and spinning of worsted, the student is enabled to obtain an acquaintanceship with the various machines, which should be most thorough.

WORSTED YARNS

PREPARING.—Explanation of the process.—Gill box and Faller motion.—What wools are prepared and why they are not carded.—Preparing medium staple wools before carding.



SECTION OF WOOL MIXING ROOM, SHOWING THE SCHOFIELD WILLOW

CARDING.—Comparison of the card used for worsted with that commonly used for wool.

COMBING.—Original method of combing.—Hand combing.—Combing by machines.—The Noble, Lister, Holden and Little & Eastwood machines duly considered.

BALLING OR TOP MAKING.—Explanation of the workings of the necessary machines used in forming the top.—The Can Finisher and Balling Finisher.—The conditioning of tops.

DRAWING.—The principles of drawing duly explained.

CALCULATIONS.—All the necessary calculations required in the above processes.

Note.—The work in this subject from the fleece to the top is largely elementary; studied more exhaustively in following year.

WARP PREPARATION AND WEAVING

The instruction in this subject in the second year is given with reference to power looms of the latest types. The student now studies the mechanical means which are in vogue for the attainment of the operations of weaving, and which were performed by hand in the preceding year. Careful attention is given to the timing, setting and general adjusting of the various parts of the power looms. The student is required to keep careful records of all such instruction, and to produce a prescribed number and variety of fabrics, of commercial proportions, from his own specifications.

The study of the power loom.—The principles governing its parts.—The various shedding mechanism, cam motion, cam and scroll motion, dobby motion.—Open and closed shed looms and the advantages of each.—The various picking motions, the alternating pick, the pick and pick, cam and cone, sliding pick motion.—Rules and calculations for change gears for the various take-up motions.—Ascertaining desired speed of shafting and size of pulley for given speed of loom.—Shuttle box motions, raise and drop box, skip box, circular box, boxes controlled by cams, by a chain and by the Jacquard.—Timing and setting of the box motions of the Knowles, Crompton, Wood, Furbush, Schaum & Uhlinger, Stafford and Whitin looms.—Knock-off motions.—Fast and loose reeds.—Harness and box chain building and care of stock.—Multiplier box chain building.—Production of fabrics for men's and women's wear, draperies, carpets, etc., from cotton, wool, worsted, silk and linen, on the latest and best looms made.

Note.—The fabrics produced by each student are from his own designs and from yarn dyed by the students. He performs all the operations of warping, beaming, drawing-in, reeding, placing in the loom, chain building and weaving, and assists in the finishing of the fabrics.

CHEMISTRY

The chemistry taken in this year covers more fully the work of the previous year in general inorganic chemistry, including the following:

The several properties of matter.—Simple and compound bodies.—Laws of chemical combination.—Elements, atoms and molecules.—The atomic theory.—Chemical calculations.—Preparation, classification and chemical behavior of the chief elements and their compounds, comprising the non-metals and metals, with special reference to those of commercial importance.

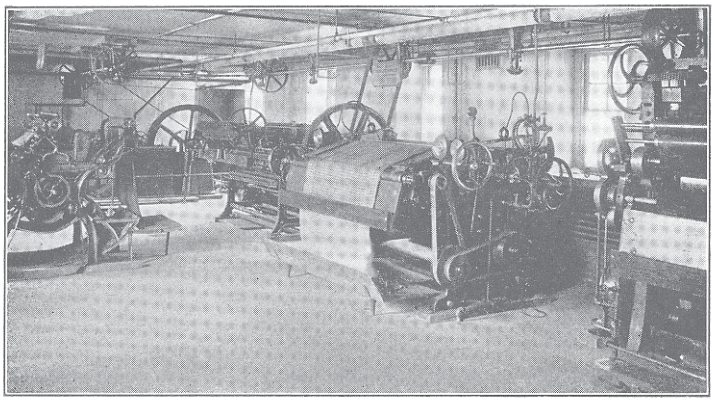
This course is carried on by means of lectures and recitations coupled with a large amount of laboratory work on the properties and preparation of chemical elements and their compounds, and leads to the study of qualitative analysis which is commenced toward the end of the year and is completed in the succeeding year.

A thorough knowledge of the principles of general chemistry is essential for the proper understanding of scouring, bleaching and dyeing phenomena so necessary in the textile industry.

Note.—The second year students of the Wool and Worsted, Cotton, and Silk Courses take no qualitative analysis, that time being devoted to the study of special dyeing methods employed on the respective fibres.

DYEING

Dyeing is also taken up during this year. The course is elementary in character, and is so designed as to embrace the general methods of scouring, bleaching and dyeing of wool, cotton and silk. Its purpose is to give the general textile student an intelligent idea of how these processes are conducted, and the principles on which they are based. The chemical and physical properties of the fibres are studied with a view to their behavior under the different processes of manufacture. The application of the different classes of dyes is taken up.



DRY FINISHING

In this room the second and third year students aid in finishing the various fabrics produced

FINISHING

This highly important step in the production of a marketable textile fabric constitutes a subject which is remarkable for its complexity. The immense variety of goods whose points of difference are dependent wholly upon the character of the finish which has been put upon them calls for the use of numerous finishing materials, and the application of these in their turn necessitates many different machines. The subject is treated in its broader sense by means of lectures throughout the season. The general underlying principles of the art are, however, exemplified by the actual finishing of many of the fabrics produced in the school, and the students have the opportunity of assisting in the incidental operations, as well as in the mixing of the necessary ingredients. The following gives a general outline of the scope of the lectures:

WORSTEDS AND WOOLENS

Process of finishing defined.—The preparatory processes of finishing, such as burling, mending, inspecting and numbering.

SCOURING.—Scouring, and the various soaps and alkalies generally used.—Action and strength of soaps for the different kinds of cloth.—How the soap and alkalies should be applied.

FULLING.—The fulling process.—Why fulling is resorted to.—The properties of a good fulling soap.—The various influences which most affect the fulling of fabrics, such as the "character" of the "fibre."—The "twist" of the "yarns."—The "nature" of the weave."—The "weight" of the "goods," light or heavy.

GIGGING.—Explanation of the term gigging.—The various machines and methods considered.—Dry and wet gigging defined.

STEAMING.—Steaming and crabbing and necessity for such treatment.—Lustre cloths.

SHEARING.—Shearing; its purpose.—The effects of previous treatment as to good shearing.—The proper adjustment of machine to shear the various kinds of cloths.—Grinding.

PRESSING.—Pressing; rotary and plate pressers considered.—Proper heat and pressure.—Style of finish considered.

Regular Course—Third Year

WEAVE FORMATION

In this, the final year of study, the one which represents the last opportunity the student will have for school work, particular attention is paid not only to weaves of a higher order, of more intricate interlacing, but to a more technical consideration, from a commercial standpoint, of weaves for the every-day fabrics. The solution of the many difficult problems in inter-weaving brought forward in this year throws a new, a clearer light on the preceding year's weaves, giving the student a far better grasp of the entire subject. In other words, he is enabled to investigate problems in a thorough manner and with the satisfaction which comes of knowing how. Three and more ply weaves are planned upon paper, both for plain and figured effects, in such fabrics as overcoatings, cloakings, heavy draperies, brocades, etc.

Study is directed in the line of such woolen and worsted fabrics as crepons, mantle cloths, habit cloths, buckskins, doeskins, carriage cloths, box coatings, casket cloth, friezes, whipcords, coverts, etc., and in all the weaves considered due emphasis is laid upon the effects which they produce when treated with various systems of coloring. Careful and extensive attention is given to leno or doupe weaves, single and double doupe, combination of doupe and other orders of weaving and the production of figured effects by means of one doupe. Lappet and swivel effects are considered. Weaves are studied which are best suited to such narrow fabrics as suspender and garter webs, goring, name webs,

shoe pulls, etc. Filling and warp pile weaves are taken for velvet, corduroys, plushes, imitation furs, astrakhans, chinchillas, lamb skins, etc. Considerable attention is also given to the study of new methods for the derivation of original ground weaves of a granite and crepe order, such as are always in demand for suitings, dress goods, etc.

ANALYSIS AND STRUCTURE OF FABRICS

The fabrics considered are in keeping with the instruction in weave formation, and are not only looked at from the standpoint of their intricacy, but they, as well as simple fabrics, are studied with more of a view to the commercial end than in either of the preceding years. A considerable portion of the work in this branch of study consists of planning the specifications for various classes of fabrics from original designs, and in many cases from yarns which the student has produced from the raw stock. These fabrics are subsequently produced by the student, he having the opportunity of performing every detail, and is ever reminded of the necessity of producing a good and pleasing fabric as economically as possible.

COST FINDING, ETC.

Various systems of cost finding, mill book-keeping, etc., are explained, as well as the questions of commissions, datings, discounts, etc. Thus the student is taught to keep the thought of relative cost well in mind.

FIGURED DESIGN AND TEXTILE COLORING

In this subject the means is offered the student to carry to an advanced state the work of the previous years, and adapting the Jacquard to all kinds of fancy complicated fabrics, especially in the direction of placing figures in three-ply or more complex fabrics.

THE JACQUARD MACHINE.—The various kinds of machines used in making special fabrics of complex nature are explained and drawings made, showing the variation from the standard machine.

Application of gauze machines carrying doupes and slackeners.—Brussels carpet machines.—Wilton carpet machine.

MOUNTING.—The student is here made familiar with the actual practice of mounting machines and tying up of the loom for all kinds of fancy and complex effects. The combination of the Jacquard and the dobby for producing large repeats in the cloth are explained, and drawings made of the various arrangements of the principal parts. Mountings are prepared for—

Gauze and leno effects.—Scale tie-ups.—Shaft lashing.—Placing of shafts in neck cords.—Placing of shafts below comberboard.—Compound harness.—Attaching of harness for ground effects, etc.—Brussels mountings.—Moquette carpet mountings.—Pile carpet mountings.

This Plate is a Facsimile of Typical Samples of Dress Gingham Materials, Designed, Dyed, Yarn Prepared and Woven, by Students themselves on the School Mechanical Equipment. (See page 43—Textile Coloring.)

DESIGNING.—The influence of color on the appearance of a design is fully recognized, and especial attention is given to the making of sketches in color for carpets and upholstery fabrics. Original designs are planned and enlarged to workable designs for—

Silk brocades of two or more fillings and warps.—Traveling robes.—Bath robes.—Tapestries.—Petit point.—Couch covers.—Shoe pulls.—Coat labels.—Necktie fabrics.—Brussels, Wilton, moquette and tapestry carpets.

CARD CUTTING.—Following the practice in card cutting obtained in the previous year's work, card-cutting directions are made for all kinds of effects, and cards are cut for original design made during the year. Methods of repeating cards by mechanical means and the workings of new automatic card-cutting appliances are explained, and sketches made of their working parts.

YARN MANUFACTURE

In this subject the student may elect to take advanced study in either the manufacture of wool and worsted yarns, as outlined on page 65, or cotton yarn, as outlined on page 61.

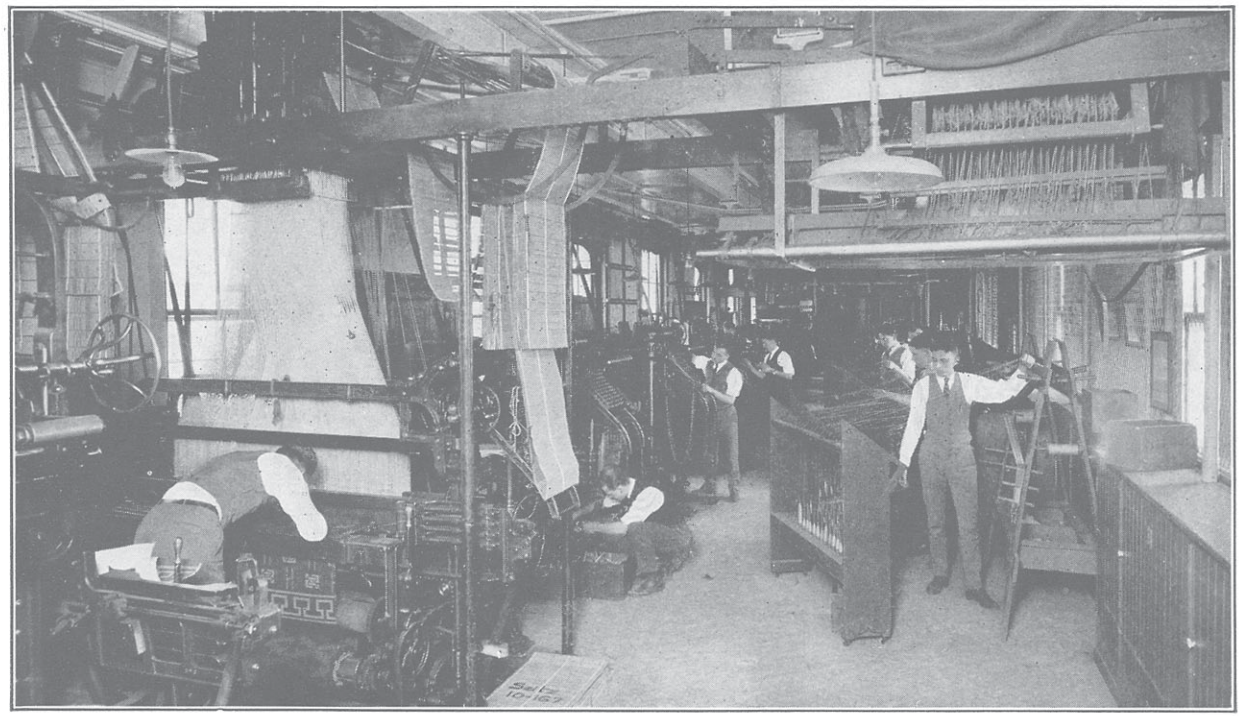
WARP PREPARATION AND WEAVING

This branch of the course is the one in which the student produces results which demonstrate his grasp of the instruction given in practically all of the other branches. The fabrics produced are from his own ideas, and, with some exceptions, are made from yarns which he has spun and dyed after having selected and prepared the raw stock. These fabrics are of a higher class than those brought out in the preceding years, and allow him to show his knowledge of structure, design and coloring. In addition to producing certain prescribed fabrics, the student is expected to execute others which he may plan, bearing in mind definite restrictions as to character and capacity of loom and limitations as to the price of the fabrics, etc., thus giving due consideration to the commercial end. The following is a brief outline of the matter included in the general instruction:

The lining-up of looms.—Starting up looms on new lines of goods.—Adjusting looms to suit the peculiar requirements of various lines of fabrics.—Adapting different kinds of looms to the same character of work.—Devices for stopping and starting take-up motions to suit special fabrics.—The production of single and double doupe effects in fabrics.—Single, double and more intricate classes of goods.—All the operations are performed by the student with only such assistance as may be called for in promoting the aims of judicious instruction.

CHEMISTRY

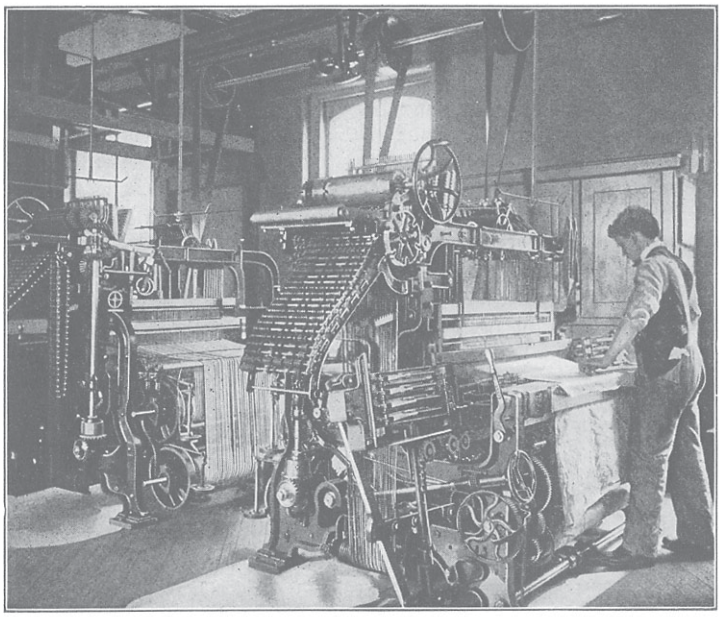
During the final year, the course in chemistry is a logical continuation of the analytical work started in the previous year.



VIEW IN MAIN POWER WEAVE ROOM

After completing the course in qualitative analysis, the student commences the study of textile chemistry which is continued through the year. This work is largely quantitative in character and embraces the following:

Analysis of mixed yarns and fabrics, consisting of wool, silk, cotton, linen, artificial silk, etc.—Conditioning of textile materials.—Determination of sizing, and estimation of oil and grease in fabrics.—Estimation of mineral matters in fabrics.—Examination of bleached goods for quality.



A CORNER IN THE POWER WEAVE ROOM

Determination of the nature and estimation of the amount of mordants on wool and cotton fabrics.—Determination of the nature and amount of weighting on silks.

Identification and estimation of adulterants in dyestuffs.—Determination of proper classification of dyestuffs.—Capillary speed of dyestuffs; detection of mixed dyes.—Testing of dyestuffs on the fibre for the purposes of identification.—Practice in the analysis of dyes in bulk and on the fibre.

DYEING

The dyeing taken up during this year has for its chief purpose the familiarizing of the student with the different effects to be gained in the compounding of colors and the production of different classes of dyed shades. This naturally leads on to the matching of colors,

in which considerable practice is given; and during the latter part of the year the student is required to dye the yarn he employs for his woven pieces, the shades being matched by the student himself. The object of the work is to give the general textile student a comprehensive idea of the possibilities and limitations to be met with in bringing into actual existence in the finished fabrics the various color harmonies and combinations which have only a potential existence in the design.

FINISHING

The preceding year's instruction has fitted the student for the more comprehensive treatment which is given the subject in this year. He is enabled to grasp more fully the reasons for the various operations through which some of the fabrics pass in order that they may be marketed as this or as that fabric; and he is instructed in the methods of determining the form of finish employed, as well as the materials used. The outline which follows gives a general idea of the matter covered:

WORSTEDS AND WOOLENS

FULLING.—Ancient and modern methods compared.—General time of fulling on various classes of goods.—How to calculate the shrinkage in length and width to give desired weight.—How and when to flock.—What percentage of flocks it is desired to use, conditions considered.

Heat and pressure, and other conditions in fulling considered.

GIGGING.—The moisture of goods in wet gigging.—Raising for various kinds of finish, "doeskin finish," "velvet finish," "dry finish," Scotch or "melton finish," "worsted finish," napping.

STEAMING.—Tub steaming or boiling compared with upright steamer or gig.

DRYING.—Comparison of the various drying machines in general use.—Effects of tentering in open air compared with machine drying.

PRESSING.—Shearing and pressing further considered.—Final inspection.—Measuring, rolling, shading.—Causes of imperfections, their prevention and remedy.—Allowances.

Note.—Students of the second and third year courses assist in finishing all the various fabrics produced during the school term.

Cotton Course

This course covers a period of two years, and has been arranged so as to provide instruction in matters bearing directly on the manufacture of cottons. The broader knowledge of the subject of textiles is not attained by a pursuit of this course, but in some cases, to meet particular needs, this specialization may be said to be advantageous.

Subjects of Study—First Year

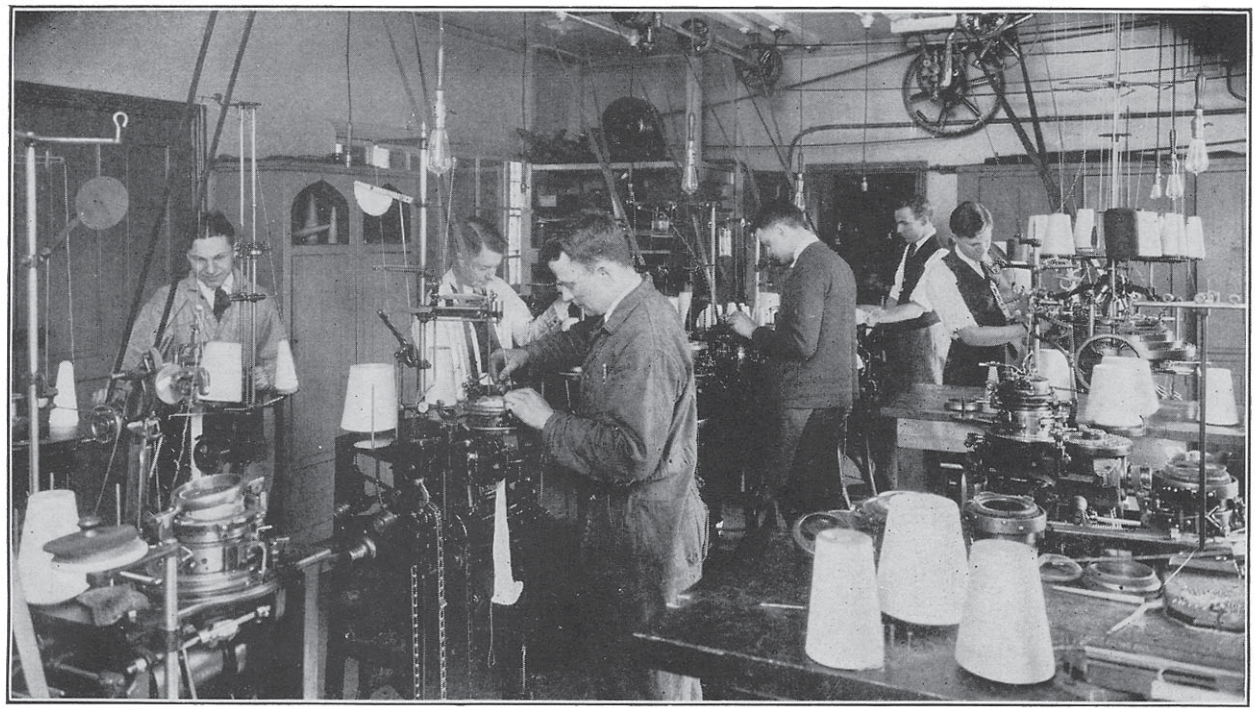
The subjects of study taken in the first year of this course are the same as those provided for the first year of the regular three-year textile course. Additional time is provided for practical demonstration in cotton-yarn manufacture, so that the student may make a more thorough study of this subject. While following the general lines referred to above, the student confines his attention to the manipulation of yarns and fabrics of cotton.

Subjects of Study—Second Year

WEAVE FORMATION

The methods of planning weaves into which an extra filling is to be introduced for the purpose of producing some figured effect, as exemplified in such fabrics as "coin spots," dotted Swisses, etc.

The principles of planning double cloth weaves, embodying the use of two or more warps and fillings.—Weave for such special double cloths, as piqué or welts, Bedford cords, Marseilles, lace effects, etc.—Various methods of planning weaves which will produce ornament on the foregoing fabrics.—Weaves for different styles of imitation gauze.—Gauze weaving in one or more doupes.—The combination of doupe with other classes of weaves.—Weaves for

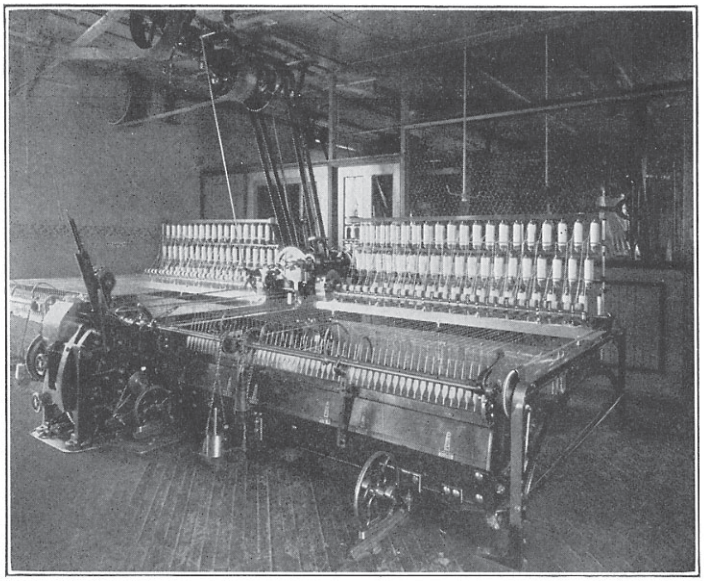


VIEW IN KNITTING DEPARTMENT

producing fancy effects by means of one doupe. The Lappet form of weaves.—Weaves for honeycombs and similar fabrics.—Weaves for fancy madras and cheviots.

ANALYSIS AND STRUCTURE OF FABRIC

For an outline of this subject, see page 49, which is followed in so far as it applies to cotton fabrics.



COTTON SPINNING MULE (PLATT MAKE)

FIGURED DESIGN AND TEXTILE COLORING

The work in this subject follows very closely that of the regular course, explained on page 50. Work of a special nature is added, such as the analysis of fabrics to obtain card-cutting directions and methods of tying up looms for the reproduction of the fabric.

MILL BOOKKEEPING—COSTING, ETC.

Various systems of cost finding, mill bookkeeping, etc., are explained, also lectures are delivered from time to time on the many problems involved in bleaching and finishing of plain and fancy cottons.